

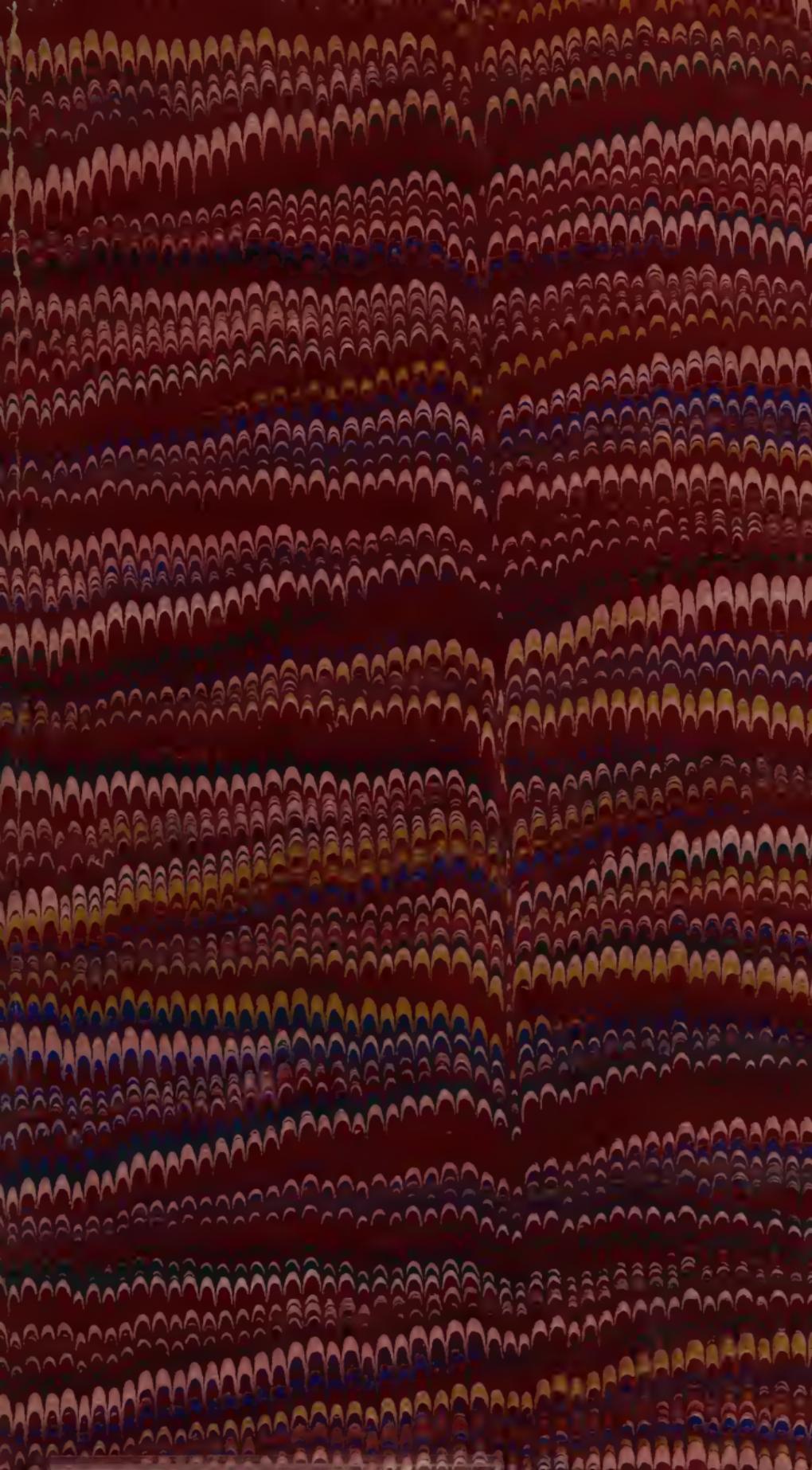
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COMMON SENSE
ON
CHRONIC DISEASES;
OR,
A RATIONAL TREATISE.

ON THE
MECHANICAL CAUSE AND CURE
OF MOST
CHRONIC AFFECTIONS OF THE TRUNCAL ORGANS
OF BOTH MALE AND FEMALE SYSTEMS.

EMBRACING THE AUTHOR'S VIEWS ON PHYSICAL EDUCATION, AND THE
PRESENT POPULAR SYSTEM OF ARTIFICIAL LIFE.

BY DR. E. P. BANNING

SIXTH EDITION

NEW YORK
PAINE & BURGESS, 60 JOHN STREET.

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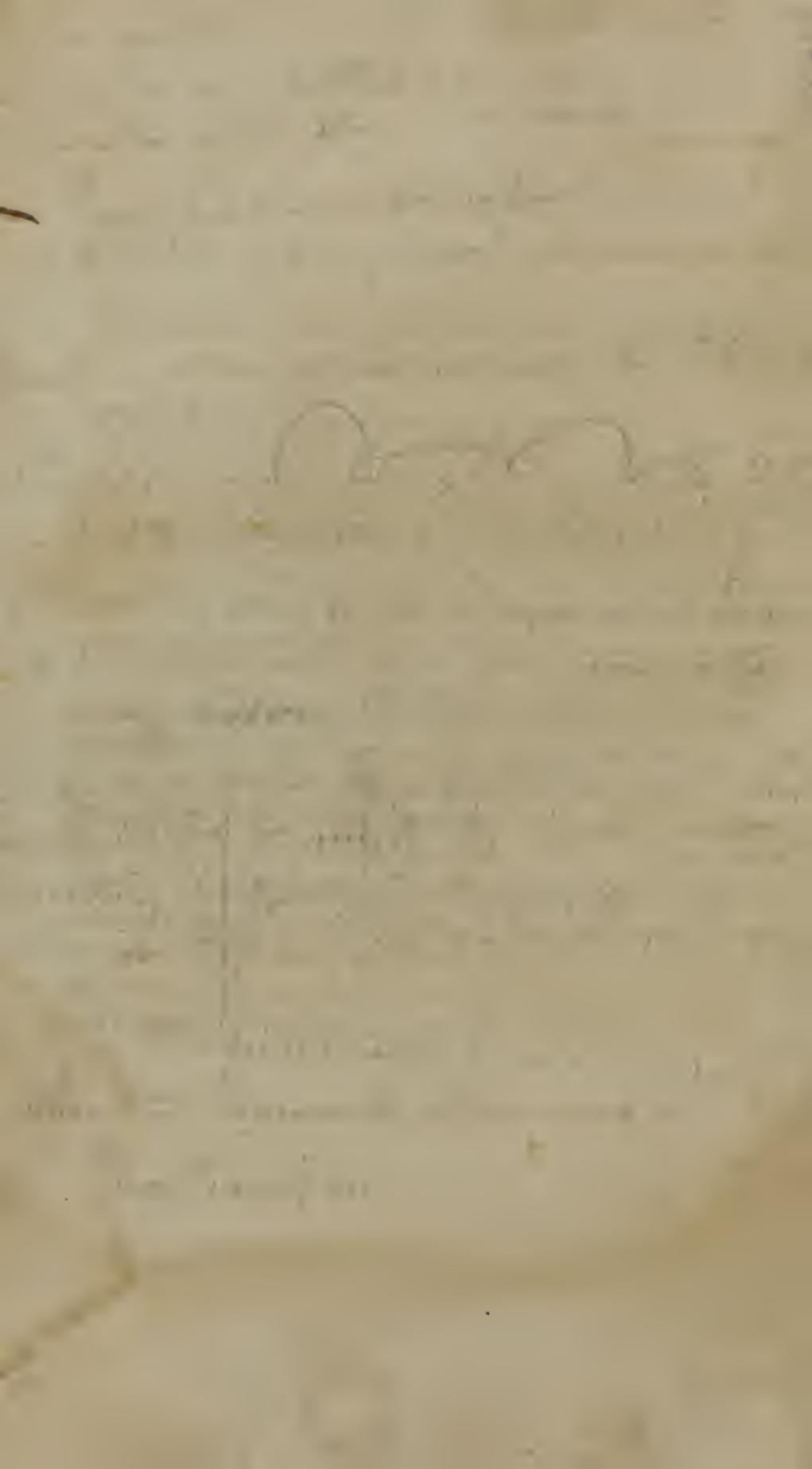
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PREFACE TO THE SECOND EDITION.

THE ready consumption of the first edition of this work, and its already manifest good effects, are my only apology for this second edition. The preface to the first puts forth my object and ambition in this—nor does this differ from the first, only in a few extended cases, and remarks, illustrative of points not clear before.

Let me invoke the Professional and common reader to read, and to criticize on the contained doctrines and sentiments only; being conscious that these only will stand the test. I believe that if parents, and the young, were to read this work universally, tongue could not tell the amount of salutary results. I regret that time has not permitted me to take up the all important subject of physical education, which must be left to a special work on that subject. That this work may be extensively read, and that those who read may feel and see as satisfying results as I have seen in hundreds of cases, is my earnest desire.

AUTHOR.



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P R E F A C E.

THE Author simply means by the *title* of this work, that the principles of the book directly address the *common sense* of all, as being either palpably true or false.

The quaint, or what some may consider the too common style and expression of the work has been intentional, so that through it, while the medical proficient can of course understand, the quite *common* reader may be brought to feel confidence in his own judgment on the reasoning, though he could not, did it assume a higher style of address and expression. To this end, technical terms have been avoided, as far as could well be, and when indulged in, generally explained.

Our general design has been to *instruct* the *people*, and make *suggestions* only to the medical profession. The contained sentiments are commended to the *confidence* of the popular reader, and to the *courteous* criticism and experiment of the profession.

The Author has not designed to put out a system of medicine, or an *infallible* cure for anything, but to show that there was a real distinction between mechanical and vital diseases, or those requiring mechanical or vital remedies, and that one *will not* answer the place of the other; also that the mechanical diseases, or causes of disease, are more common and extensive than is generally supposed. Though *some* things, mere matters of opinion and theory, *may* not be true, yet the practical part of the work he knows to be true from long and extensive experience. Indeed, he feels that Christian and philanthropic

duty has demanded the work at his hands, and hopes that its *minor* imperfections may be lost in the contemplation and application of its major and practical features.

If his views of prolapsus, costiveness, piles, dyspepsy, heart, lung and spine affections, are even half or a quarter true, they, even then, are of *immense* value to both the profession and the world. Let them not be rejected then, as they are *harmless*, and do not interfere with any other proper treatment simultaneously.

One thing the Author knows, viz., that many poor, afflicted, broken down and disconsolate souls, who read this, will be *struck* with the sympathy of the book with them, and even then feel a flush of hope arise in their bosoms, in despite of their many past disappointments, and present discouragements.

The sedentary, literary and clerical community may find, in the practising by this work, a great antidote to their ills, and remedy for them.

But the work itself will be its own best expositor, and that it may be extensively and attentively read, and be the means of great good, is the earnest and sincere prayer of the humble

AUTHOR.

COMMON SENSE.

INTRODUCTION.

THE subject of the ensuing work, unlike other important subjects, is very happy in many respects. Some subjects of vast importance, press their claims for attention only on the forbidding plea of necessity, and receive a forced and unwilling notice. Others are of a character wholly intellectual, and of a literary or moral cast; such will elicit a willing and happy attention from the few who are formed by nature or education to delight in these themes.

Others, again, address only the taste, and feed the volatile senses and passions; of course offering but few charms to those of a practical and moral cast of mind. Indeed, there is almost an infinite variety of character in the subjects chosen by different writers, and adapted to the varied tastes and wants of a diversified world; but, from religion, down to the most grovelling topic, there is but one theme that possesses a charm in its name and import—vibrates on every heart, and addresses every taste and turn of mind, from the devout religionist to the confirmed materialist, from the rich to the poor, the learned and the ignorant; that theme is the *health of the human body*.

While every son and daughter of Adam continues to possess one common organization, and remain under one and the same set of laws; and while they all continue to feel in their bodies the effects of the fall, so long will there be a perpetual exposure to some variety or other of the physical woes, that, in their turn, afflict our fallen race; and, consequently, while the love of life or the fear of death, the desire of ease and dread of pain, hold their empire over man, so long will the subject of human health be important and interesting to all alike.

In this view of the subject, it appears that the theme of this work lays hold on the dearest earthly interests of society. Upon its consideration, or the comparative state of health, depends the enjoyment of all the ties of consanguinity—the continued and reciprocal happiness of husband and wife, pa-

rent and child, brother and sister, friend and neighbor, and also our individual comfort, as connected with the laws of life, and the uncertain wheel of casualty.

Then (waving the question of competency to do this subject justice), do not the above considerations offer an ample apology for a popular treatise on this topic?

But here we may be met by some churlish "dog in the manger"—some *snarling* member of the profession, who is ready to acknowledge the force of the subject, but who cannot see the propriety of presenting to the people, in a popular form, subjects so abstruse, and so far out of their province, asserting that there is a *profession* whose express object and province it is to investigate these matters, draw the proper inferences, and deal them out to a dying community, at *their* discretion, and as, in *their* view, they may need; who cannot see what the people have to do with the principles of human physiology.

In reply to the above notion (if a reply is necessary), I would say, in the simplicity and honesty of my heart, *who*, besides the afflicted and suffering people, have, or should have, a clearer right to be addressed and informed upon this subject? Certainly none. There is an exceeding fitness and propriety in their being instructed upon these vital points; by this means, and this only, can the causes of physical evil be mitigated and removed. Shall we look at this subject a moment, in the light of analogy, comparing it with another important, although not *equally* important interest? Ours is a republican form of government; the people are the sovereigns, and the source of all power, to whom all delegated power is reflected back. Rulers and officers are not made because of the propriety of the thing in nature, or on account of an inherent right in them to rule, but as a matter of expediency and necessity, growing out of the nature of the case. In this view, then, the rulers and officers are only the servants, not the masters of the people. Suppose, now (to represent a parallel to the case of the *pouting* doctor), that the members of the national government, from the President down to the lowest official, should rise in opposition to the instruction of the people, in matters of a governmental nature, or general politics, and should say, "that was not the province of the people, that it belonged to *them* to concert plans and make laws," asserting "that to improve, or confer with the people upon these subjects, only engendered confusion, and made them troublesome and litigious, while, at the same time, these officers are entirely dependent upon the people, and made necessary only by their wants. Such a position would not, for a moment, be admitted. Such a surrender of inalienable rights no people would make. Whatever affects their vital interests, directly or indirectly, it is their province to examine. The analogy between the civil and medical

profession is perfect, so far as the interests of the people are concerned; their wants and woes affording the reason and necessity for both. Who, then, rather than the people, should be entrusted with these matters? Who are they for whom the medical profession is established? Who take the calomel, the pills, the emetics, and feel their good or bad effects, but the people? Who but they endure the severing and hewing of the knife? Who run the hazard of correct or incorrect practice? Who but the people *support* the profession, whether wise or foolish, righteous or wicked?

Since, then, the people are the very ones who alone are directly interested in the practical results of the profession, is it not desirable that some general knowledge of the science should be given them, whereby they may be able to judge who is competent and who is not, or, at least, to judge who are within the proper limits and who not, and thus avoid the necessity of going from one to another to test their qualifications by actual experiment? Whoever takes this latter course, generally does it at his cost, or, at least, brings about "a galloping consumption of his *bank notes*." In reference to the effect upon the profession, of making the people well informed and intelligent, we remark, that it cannot operate to the disadvantage of any but quacks, who depend upon the *credulity* of the people, and not upon their *intelligence* or their own personal merits. The less the people read or know, the better for *them*, as such are only moved by caprice or fortuitous circumstances. But to the worthy portion of the faculty, much is gained by spreading information upon human physiology, and rendering the community well-informed in this particular. When intelligent, the people know when they are properly treated, and have some correct idea when the management is rational, or at all within the bounds of common sense.

The physician can then proceed in his course, and meet no hand to resist him as he holds the knife or deals out some apparently deadly drug.

On the contrary, intelligence makes the sufferer patient, confiding, in the hour of ill success or misfortune; and while disease or death smites them on the one hand, they hold up the drooping head of their medical friend, who in such cases is more to be pitied than blamed.

With this view of the subject, surely there can be no valid objection to correct information of a practical character being laid before the people, in a manner adapted to their capacities.

Again, this knowledge, when appreciated and obtained, gives them the ability of evading disease and pain to a great extent.

It will not be my object, in the publication of this work, to make physicians of everybody, or to intimate that everybody could or should be a self-constituted physician.

Neither do I mean to insinuate that there is no necessity for, or efficiency in, the profession, or to at all detract from its members in any desirable quality; but simply design to effect the following objects, viz.:

First, To lay before the medical profession my views on the subject of anatomy, more especially in its combined relations. This I do without any design to dictate or egotize, but simply to express my sentiments, *submitting* them to their *candid* examination and improvement, inviting their impartial but *MERCIFUL* criticism. This I feel both free and bound to do, as, should the ensuing views be found correct, and be judged practical by the profession, then an era of a desirable character in the treatment of some fatal and *most* chronic complaints will soon come, presenting, as these views do, these unmanageable diseases before the profession in a new and more hopeful light. And in thus venturing to present these peculiar views to the profession and the world, we have special encouragement from the fact, that already they have been partially offered to the most learned and ingenious of the profession, and some of the most intelligent members of the community, and received their most hearty and cordial approbation.

Another object that I have in view, is, to elicit, either by the truth or error of my positions, a more extensive and accurate investigation of the subjects herein treated, more especially those relating to the design *in*, and effects *of*, the existing relations of the material composition and construction of man, endeavoring, as I shall, to show that the moving cause of disease lies in his *material* part, and that it is to be remedied by attention to his mechanical relations, and not by speculations on his *vital* part.

Again, my object in addressing the popular mind on this (supposed to be) abstruse subject, is to impress the community with the dignity and importance of the science of human physiology, and to show that it is the duty of every person to investigate the formation, laws and operations of his frame, and, also, that the subject is entirely within the comprehension of every industrious, ordinary understanding. In effecting this laudable purpose, we shall not pretend to lay before them the anatomy of the human body in all its bearings and relations, or enter into the considerations of all the discovered or *supposed* laws of physiology as developed in the involuntary functions, effected and superintended by the *nerves* of organic life, but bring to view so much of the construction and philosophical arrangement of the human system, as will enable the reader to understand some of the fundamental laws of life. In doing this, it is my desire, by addressing their *common sense* only, to show them how healthy functions are produced and perpetuated, and that, in their own bodies, they have the most

efficient preventatives of disease, and preservers of health ; and also, that when these laws are once invaded by disease in their systems, the plan herein specified, in connection with implicit obedience to common sense and revelation, is the simplest, and most harmless, and efficient curative agent in nature or art : finally, that in these operations there is no mystery, but that all is produced by common causes, or the natural action of matter upon matter.

But let it here be distinctly remembered, that while I attempt to demonstrate the material part of man to be in fault, in the foundation or perpetuity of diseases, I only desire to establish this fact, *as a fact*. I do not desire to overthrow other positions, relating to the nature and cause of diseases, that have been made manifest by experience. I only desire to establish the fact, as a *principle*, which is to stand in its place, just as do other facts and principles, to be applied and used as the judgment of the practitioner or the nature of the case may demand.

The ultimate object and desire of the medical profession has been, and now is, to provide for the human race an antidote to, and remedy for, all the variety of forms, and intensity of woes, with which disease afflicts the mortal body. But, laudable and desirable as is the attainment of this object, it is to be acknowledged that it has come far short of its attainment. Yes ; the many badges of mourning for the untimely loss of friends, the decrepit forms, the protracted agonies and groans of languishing mortality, all testify that the prowess of our profession is circumscribed indeed. But, circumscribed as it is, and glaring as is the fact, it is equally true, that, by aiming at the whole, and by combined and united energy and perseverance, the profession has been of incalculable benefit in the amelioration, if not the cure and prevention, of nearly all the woes incident to human life, in the form of disease. Many, by its wisdom, are taught to shun and to counteract the predisposing causes to disease ; by it, many *would-be* fatal diseases are arrested, checked, or finally deprived of their victim ; and many that have hitherto been incurable, have been mitigated.

Still there is a class of diseases that march on in scornful triumph, bearing their victims steadily and boldly on, amidst the ranks of demurring friends, in spite of all the glittering implements of the surgeon, and the less frightful, but not less potent drugs of the apothecary. Yes, in this our day, there are diseases, so fatal and sure in their course, that we have little to do, but to be certain of their actual establishment in ourselves or friends, and prepare for the world where no disease can come.

A natural inquiry will here present itself, like this :—And is there no hope, no prospect of triumph over the worst of diseases, in time ? We answer, that in view of the ill success

of the efforts of the profession in some of the diseases, there seems to be but little hope; but, in another point of view there is one ray of hope to cheer the physician, and the heirs of disease, viz., this; the rapid march of improvement in science for a few of the past years, and the final triumph over many diseases that were once considered as fatal. Once the various forms of Scrofula were considered as positively incurably, as a constitutional disease; but now it is not so. Once diseases of the Liver, and many others, were viewed in the same light, but they may be now approached with complacent confidence. Upon the strength of these facts, we have a right to hope, upon every principle of philosophy (reasoning *a priori*) and we do verily believe, that, before time closes, there will have been found an antidote and a remedy for every disease; and that if the whole human race would live in consonance with the laws of life and of revelation, every son and daughter of Adam might live out all their appointed days, or "come to the grave, like a shock of corn that is fully ripe and laden with plenty." But we ask, from what quarter is this relief to come? has not the ingenuity and imagination of the whole world been racked, in speculation on the vital principle, to find out a rational hypothesis of the action of consumption; and have there not from thence sprung as many theories of its cause and nature, as there are ambitious men in the profession? Furthermore, has not the whole material world, from the mineral to the animal kingdom, been ransacked, to find remedies for this and other fatal diseases? Yes; and with wild frenzy have they been applied, often till the last vital spark was smothered. Then since every speculation on the vital principle has failed in the elucidation of the nature of our fatal diseases of the trunk, and seeing that every variety of treatment, as applied internally, to act only through the vital principle, or on the excitability of the fibre through the vital principle, has completely failed, what shall we say? Is not the prospect of success on the old doctrines a gloomy one?

But has every source been fathomed? We say, no; transporting experience has lighted up a hope of better days, to some extent. This hope is found on turning from the vital principle of man (as being the seat of these diseases), to his material part, and viewing it in *its* formation and arrangement, as being primarily concerned in the derangements of the vital function: and you will plainly see, that we believe that most of the diseases of the vital functions are but the effects of some mechanical or chemical derangement.

Much time and talent has been expended upon the physiology of the human system; and whatever dignity may be attached to the profession, or efficacy ascribable to it, is referable to the success of physiological research. But many of the

discoveries in this science have been plants of slow growth, and of modern development.

We will here remark, that it is singularly true, that progress in science has not brought to light any new or great mysteries to astonish the wondering and admiring eye, or to perplex the inquirer with the increasing complexity and number of the laws that control the human system in health and disease; but it has tended to sweep away the mists of complex theories and hypotheses, and to the unfolding of the mysteries and laws of the human economy,—showing that they are few in number, and that they consist in simplicity of principle and function.

Furthermore, as the healing art progresses, it tends to reduce the science of life and disease to those general and tangible laws and principles that preside over and govern the universal action of *matter*. Thus, the false dignity of the profession is being swept away.

Yes, we say that new discoveries tend to sweep away the *false* dignity of the profession, and make the healing art beautiful, seeing that while the phenomena of life are so complicated, the laws that govern them are few and simple, and easy to be comprehended by every common understanding.

Once the human system was looked upon as a mere moving mystery, without any rational comprehension of its structure and functions. Once the muscular system, by which all the movements of the body are propelled and made regular and efficient, was not at all understood. Once the circulation of the blood, by which the system is perpetuated and nourished, was not dreamed of; the best and wisest of the faculty supposed that blood flowed through the system, like water through a sponge. The function of assimilation, by which the food is turned to blood and flesh, was not conceived of: and many other matters like the above were chaotic, but now are perceived by every common understanding, and explained by the general action of matter on matter.

Again, as the human economy is more perfectly understood, the more does it resemble a machine of great complexity and perfection; and, like a machine, is governed and propelled by the combined mechanical powers and philosophical laws that control all arrangements, and give order to their operations; thus reducing the science of life and disease to those great and tangible principles that are understood by every one; making the human economy to appear sublime, as well as wonderful, and giving us rational cause to exclaim with the Psalmist, “For we are fearfully and wonderfully made.” While holding up this analogy between animate and inanimate machines, we will speak of some of the characteristics of each: viz.—The one is made by finite hands, propelled and perpetuated by second and promiscuous causes; whereas the other is made

by the *Eternal* hand, in *infinite* wisdom, and is propelled and preserved by an *unseen* power, acting in an *unseen* and hitherto mysterious manner, and that *without cessation* until life is extinct.

These crude ideas will be our apology for and introduction to the ensuing notions on the physiology of the human system, and the pathology of many chronic and formidable diseases, together with a proposed plan of prevention and cure.

Much as we admire the research of Magendie, Richerand, Chapman, and others, and value and acknowledge the accuracy of their conclusions, we have not felt satisfied that all was known that might be: and while we could offer no improvement to their views of *organic* life, as exemplified in the functions of assimilation, secretion, absorption, the heart's action, &c., we are emboldened to inquire a little further for a satisfying pathology of *Consumption*, *Dyspepsy*, *Prolapsus*, and other diseases, and see if they do not originate in the morbid relative bearings of the *machine*; and thereby render those opprobrious complaints more manageable, in *some* cases at least. We believe that a common cause of the chronic complaints of the human trunk may be found in the mechanical arrangement, and is to be treated on natural principles, or rather, by restoring the parts to their natural bearings; believing them to be only symptomatic.

Our inquiry is based upon the following positions, viz.: When we look into the general principles of natural philosophy, or the general action of matter, and take into consideration the mechanical powers that govern and propel all machinery, and see how natural their action is, and compare *them* with the anatomy of the human body, its functions, and the position of its parts, we are led to conclude that there *is* a striking analogy between them, in action, and in propelling power. We see that, in machinery, it is the due and primitive relation of parts, and the action of matter and power upon this relation, that secures the specific action of the machine. Just so, we infer, in the *human* system (so far as matter and mechanical arrangement are concerned), that a certain relative position of organs is designed and *only* one relative position, and that *that* arrangement is mechanical, and under the ordinary mechanical laws.

We also see, that when there are derangements in the *operations* of machinery, they are remedied by a direct reference to the *mechanical* derangement, whether of shape or malposition; without any reference to any inherent *property*, or change in the composition of the material. So we infer in the human system, so far as matter and mechanical arrangement are concerned. For instance, if one organ change its place, it breaks the primitive and reciprocal arrangement, the mechanical rela-

tion will be lost, and there will be vital embargo, from a mechanical cause. And why may this not be reasonably inferred of the *soft* parts, since this law prevails in the hard? If there is the least departure from the primitive arrangement in the bones, there is immediate pain, and loss of function.

Furthermore, the malady is always remedied by mechanical force, placing the parts in their primitive relation.

Let us now illustrate and confirm this idea, by referring to the mechanical arrangements of two nicely adjusted instruments—the lever watch and the locomotive—considering particularly the operation of the machinery with reference to the design of the machine.

The watch is a complicated and beautiful arrangement of many parts; its very appearance and regularity exhibit design, and show that some specific function is expected to be performed by it. The ultimatum of this design is to secure a correct index of time. Now, the two extreme points in the machine are the main-spring and the hair-spring. The main-spring is so situated and arranged in its connection with, and action on, the adjoining parts, that it is obviously the motive power, or source of motion in the watch. The effect of the forcing elasticity of the spring is felt by each successive wheel, until it reaches the hair-spring, and balance-wheel, causing a specific motion. Now it is perfectly clear, that this specific action is the direct result of the specific mechanism, and relation of all the parts, individually and collectively. It is also obvious, that if any one of the smallest parts of the watch changes its relation, the primary design of the instrument will fail of accomplishment, and its function be entirely destroyed or modified. For instance, suppose that while the main-spring is good and active, the hair-spring should become entangled and cease to play; of course the watch stops, yet the *moving power* is not at fault, but *one* part of the well adjusted *whole* has failed to discharge its reciprocal office, and the whole is deranged.

Again, in the case of a *locomotive*, we see that there is a specific design in view in its whole complex arrangement, which is only attained by the complete development and perfect action of all the parts of this extensive machine, and is independent of the composition of, or any inherent agency in, the material of which it is constructed.

Yet, perfect as it is, of *itself* it can do nothing. The steam must be added. The large crank, moving as it does all the rest of the machinery, is now set in motion, and the design of the machine fully accomplished. There are several points to be considered in this phenomenon:—viz., neither the locomotive, nor the steam, nor the composition or inherent properties of the locomotive, constitute the operatives; but it is the mat-

ter, the arrangement of this matter, and the steam applied to this arrangement, that constitutes the operative characteristics of the machine, and all must be under the direction of the intelligence of the engineer.

Now let us suppose that there is a very slight disarrangement in the mutual and original bearings of this philosophical mechanism ; then, of course, there will be an interruption or modification of the movements of the combination, and these interruptions and modifications must be remedied. How will the engineer effect this ? Will he suppose that something is wanting in the inherent properties of the material, or will he conclude that there is a deficiency of steam, or that it is of a vitiated character, thereby producing vitiated mechanical movements ; and in this view of the subject medicate it, and add to its power by fuel ? Most certainly not ; but he will at once dismount from the car, and look through the mechanism to see if *it* is still perfect, and if not, to find wherein the imperfection consists, and how it may be remedied. This once done, the steam, properly applied to the mechanical arrangement, instantly propels the locomotive onward.

These common-place remarks upon machinery and its functions, can be easily understood and appreciated by all. Now let us turn to the human mechanism, composed as it is of matter, mechanically and philosophically arranged, and also containing in itself its own propelling and self-directing power, and see if some interesting and useful inferences may not be drawn from the above remarks. Let us look for a moment to the creation of man. He seems to have been, at first, formed or *made* by the divine hand, as other parts of creation. In this state of being he was a perfect composition of human matter and parts, or, at least, it appears so from the language of Holy Writ,—“ And the Lord God formed man.” The work, so far as the mechanism is concerned, although still inanimate matter, seems thus to be entirely finished, and whatever else might afterwards be added, no addition could be made to his material fabric, but must have been an appendage, a property, or a function, not a part of the human machine in the abstract.

In this view of the subject, then, Adam was emphatically a man, at the time when he was said to be made, before the breath of life was breathed into him. At this point in the comparison, man is like the watch with the main-spring confined, or the locomotive before the steam is applied—the composition right, the arrangement perfect, and the design in the mechanical and philosophical arrangement clearly perceptible and attainable—all that is lacking is the power to “ *will* and to *do*.” When that power is once given, without adding anything to the perfection of the machinery, it sets it all in beautiful and harmonious action. Hence it appears that healthy and proper

action is produced by, and depends upon, the matter and mechanism, and not upon the moving power, and that when their operations are deranged, the disturbing cause must be there sought and remedied. If this train of analogical reasoning is correct, then it will follow that the vital principle of animate or animal matter is not a part of the animal creation, but an appendage only as an operative agent—that it is not a *thing*, but a *principle*, like other known but intangible principles in the natural world, such, for instance, as gravitation, &c.

It will also be seen in morbid human or animal phenomena, that the vital principle will not be in fault, on account of a weakly state, or morbid action of itself, any more than a perfect mainspring is at fault when the watch runs irregularly, because the wheels are disarranged; or the steam at fault when the machinery is disturbed. We see, also, that the operative parts and the propelling power are entirely distinct, the specific action and character of the latter being determined by the well defined laws of the former, and its integrity depending upon their harmonious action.

Another point of analogy between the locomotive and the human mechanism, is seen in the fact that the propelling power, or vital principle, cannot deteriorate or become sick, as it is an eternal principle, unchangeable and indestructible in its nature. Could it become sick, or be weakened, then it must die. If this is a correct conclusion, the cause and direct origin of disease is in the mechanical or material part, and not in the vital or immaterial part. Of course, then, in our practical investigations of diseases and remedial applications, we must have reference to the physical or tangible part only. It is not the *steam*, but the disturbed or broken engine that is at fault.

The last point of analogy upon which we now insist, is that there is, as in a perfect machine, one specific position of organs and parts, and one only, constituting a perfect and healthy man, and that any other position or relation will proportionally disarrange the whole fabric and its functions.

With these remarks, we proceed to say that there are two distinct physiologies, the vital and the mechanical, each having a distinct dominion, and both combined producing a compound of mechanical and vital phenomena.

Upon vital physiology we need say but little, as it has already received, from minds of high order, all the attention it merits. We will only observe on this point, that vital physiology relates to the vital and involuntary organic functions, as in the case of the heart's perpetual action, the offices of the liver, the function of assimilation, &c. But of mechanical physiology we intend to speak more at large. Indeed we expect to make it the foundation and theme of our subsequent remarks, as in its province are most of the tangible and perceptible functions of

life—functions susceptible of investigation, and of improvement or depreciation.

This branch of physiology seems to be, in a great measure, independent of the vital. It relates to the physical and corporeal arrangement of man, and the natural and noted results of this combination, independent of the vital principle, or any inherent properties in the composition of the material.

If our remarks have been correctly understood thus far, we may feel a confidence that the reader will pardon us for intimating, that physiological research has been too much confined to the investigation of the vital principle, in a therapeutical point of view, and not sufficiently to the material and mechanical part of man.

As the vital principle is immaterial, and can only be known by its phenomena, not being an object of sight, taste, feeling, or smell, it is folly to spend *our* good sense and precious time in speculations upon it, with practical reference to the pathology and the treatment of disease.

Another fault in physiological investigation (as we conceive it), has been that the contents of each of the truncal cavities have been examined in their local and isolated condition and relation, just as a merchant would examine three boxes of merchandise—first one, then the other, without any sufficient reflection upon their relation to each other, or upon their individual relation to the whole as a material mass, governed by the laws that preside over all matters and mechanism, in all circumstances and situations.

It is our most decided opinion that there can be no adequate and proper knowledge of either one or all of the truncal organs obtained by an isolated examination of them severally, owing to their connections and relations with other portions of the body; but that they must be viewed together, as forming one complicated but regular machine, developing both mechanical and vital phenomena, the latter entirely dependent upon the correct action of the former. For instance, in all of the functions and phenomena, healthy and diseased, the pectoral contents cannot be understood without an extended knowledge of the mechanical arrangement and anatomy of the contents of the abdomen and pelvis. For, as there is one place, and one only, for each organ, and all collectively, then if a change takes place in one or all of the organs of the abdomen or pelvis, there must be a corresponding change in the mechanical relations of the pectoral organs, offering, perhaps, a material obstruction to the healthy vital phenomena.

From this view of the subject, it will appear obvious that there may be a mechanical class of disease, that must be treated, in part at least, mechanically, and that is, not primarily under the cognizance of medicine.

If it be true, then, that in physiological investigations these extended and combined relations are overlooked, what will be the natural tendency of the error?

We reply, that this evil will be most evident in a pathological point of view, and that the true pathology of one class of diseases will be entirely overlooked.

We will be prone to mistake effects for causes, and *symptoms* only for diseases—to look for the seat of the disease at or near the locality of the pain or morbid development: whereas it will only be the effect that we see and treat, while the primary cause is very remote, and so trifling that it eludes our research.

Thus we will be treating symptoms and not diseases, effects and not causes, and leave the patient too often uncured, and to die from the progression of the symptoms and effects to independent diseases, when, in the simplest manner, the cause might have been removed.

Such is the case in many diseases, as Hysteria, Hypochondria, Dyspepsy and Prolapsus, all of which only sport with the puerile efforts of internal remedies, and go on to lay the foundation of fatal diseases, while they tear up the roots of individual and domestic happiness.

With a view to draw a line of distinction between diseases requiring constitutional treatment, and those requiring mechanical, and to reduce to simplicity of origin, nature and treatment, a formidable class of diseases, that hitherto has but too successfully combated the prowess of the medical profession, we propose to attempt an examination of the mechanical arrangement of the human trunk—having no reference to the vital functions of the trunk, or its organs, except as the result of either a natural or unnatural relation of the mechanical parts. In doing this, if we mistake not, we shall find a clue to pulmonary and other fatal complaints, that may lead us to more rational treatment, so far as medical treatment is of any service.

In conducting this investigation, we will seek to be guided by the light of reason and *common sense*, just as we would set about inquiring into the mechanism, design, philosophy and operations of any extensive, complicated, interesting and beautiful machine. We, therefore, beg our readers to lay aside high notions, and *descend* to the simplicity of truth—setting down as truth in the living human system, what would be truth in inanimate matter under similar circumstances; for the living characteristics of the human fibres do not render nugatory or alter the laws of their mechanical combinations.

With reference to each organ, or set of organs, in either or all the trunical cavities, our opinion is, that a just apprehension of them cannot be formed by an isolated view of either or all of them, in their vital or physical properties. We believe, in

order to understand anything of the physiology of the trunk and its organs as it should be, they must be viewed in combination—as a whole. For, in view of what has been already stated, it will be distinctly borne in mind, that all the organs have two different functions to attend to—the vital or specific, and the mechanical or physical; and that upon the perfect arrangement of the latter depends the proper performance of the former, although the former are alone *directly* concerned in the production of the vital human phenomena.

Thus it seems that these two sets of functions are at once independent of, and at the same dependent upon each other. For the mechanical arrangement and relations existed before, and independent of the vital; but without the vital action connected with it, the specific object and design of the arrangement will be lost—thus we see both the dependence and independence of mechanical physiology.

Again we see that the vital physiology, or living characteristics of the organs and fibres of the organs composing the mechanism, is wholly independent as to its existence and peculiar properties; but that it is perfectly dependent upon the perfection of the mechanical arrangement, for the full development of its specific and sublime phenomena.

And on summing up the whole, we see the superior independence of the mechanical functions and their comparative importance, as, without their harmonious adjustment, the most powerful principle could be of no avail.

Our views in the premises now being so fairly stated, that neither the medical profession, nor yet the popular reader, can understand us to mean too much or not enough, we proceed, in the subsequent part of the work, to examine the mechanical physiology, or the *mechanism* of the trunk, for the purpose of reducing to simplicity the origin, perpetuity and cure of a formidable group of diseases, hitherto the bane of domestic happiness and the opprobrium of the physician. As we do not wish to add to, or diminish from, the views of physiologists on the vital phenomena, we shall not notice them directly: therefore not forgetting the vital part, we shall confine our remarks to the mechanical relations, in their individual and combined influence, thereby rendering the vital phenomena rational.

CHAPTER I.

THE TRUNK—THE SPINE—THE RIBS.

I. We propose first to take a view of the normal or healthy arrangement of the trunk—ascertain what the relation is, and, also, what supports and preserves this relation.

II. To take a view of the same trunk in a morbid or diseased state, (i. e.) when the power that retains it in the true position ceases to perform its wonted function.

III. To take a pathological view of the system while in this mechanically deranged state, and apply it to diseased phenomena.

IV. To draw from such views practical and curative suggestions.

And before we proceed to develope our views, for fear that we shall happen to be misunderstood by any one, we again distinctly state, that if we do succeed in fully establishing our positions as to the mechanical cause and perpetuity of many diseases, we do not intend that it should follow, that these diseases must *always* be the result of these causes, and that therefore they will always require mechanical treatment; we only wish to establish the principle in the abstract, as a fact, and, as such, worthy of general attention, and subject to the judgment of the suffering patient, and of his medical adviser.

The Trunk.—We now proceed to examine the trunk as a machine, viewing its organs individually and in combination, so far only as affects the object that we have in view.

I. We look first at the mechanical arrangement of the trunk, in its bearings and relations, particularly observing the power that preserves this relation entire.

II. We view it as thrown into an unnatural state or set of relations.

III. We inquire, in the light of common sense, what would be the mechanical and vital influence upon the organs and their functions, and then offer such practical remarks as may be proper in reference to the treatment of such morbid cases.

We notice, first, that the trunk has a hard and solid tissue for its support and symmetry. These hard parts consist of the spine, breast-bone and ribs. Of these, our prescribed plan will allow us to say but little—just enough to accomplish the purpose intended—leaving much that is important and interesting in a physiological point of view unnoticed.

The Spine.—The spine, or back-bone, consists of numerous bones of similar configuration, constituting a perpendicular pile of bone, with gentle curves along its course. Between them is a substance like gristle, called cartilage, having much the same quality as India rubber. These bones are firmly (comparatively speaking) bound together by thin, strong, and inelastic tissues, called ligaments, (i. e.) they have but a *nominal* elasticity. The functions of these ligaments seem to be confined to a limited extent. First, they seem to keep the bones in proper contact, and a proper place relatively. Secondly, they serve, by their great firmness and inelasticity, to preserve or assist in preserving this long, perpendicular pile of bones in a proper perpendicularity, while carrying the burden of the whole trunk, and other burdens commonly or accidentally borne, in the common or casual circumstances of life.

But when we consider the thinness of these bones, their number, and the length of the pile, together with the weight of the pile, and the casualties to which it is subjected, and at the same time recollect that the small of the back is to be the base or pivot of power on which all weight and motion acts as on a fulcrum, we see that there is nothing, in either or both the formation or attachments of these bones, that can effectually secure their relative position and undisturbed functions, although it is evident they may do much towards effecting this important purpose.

But when we view the spine (i. e. take a side view), we see ample means for the support of the trunk. This supporting power lies in one of the commonest laws of philosophy, viz., gravitation.

We see that the spine is so curved, that the small of the back is the centre of the body's gravity. Where there is the most stress laid upon this support, there it bends forward, into the abdomen, as it were; then it inclines back like an inclined plane, until it arrives at the prominence of the shoulders, making room for the lungs and heart. Thus the weight of the upper portion of the trunk is thrown behind the axis, while the abdomen is thrown in front of it. We find the head, when properly erect, situated just about in the axis, rather throwing its weight behind it.

Thus, by the nice balancing indicated in the healthy trunk (See Fig. 10), the average of the body's weight is taken off from the connecting back-bones. Here we leave the consideration of the form of the spine, until it is again called up in our pathological investigations, with a single remark. It should be borne in mind that in the healthy trunk, the lumbar region, or small of the back, should be quite hollow, and the shoulders, or dorsal region, have quite a prominence behind, so as to counterpoise the gravitating influence of the abdomen in front of the spine;

and, also, that the head should be so curved (as a general rule), as to bring the law of gravitation to the aid of the trunk, in preserving the body in its proper and quiet position. The spine forms a firm band of union to the rear extremities of the ribs, and is the base of the chest.

The chest may be said to consist of the spine, breast-bone or sternum, and the ribs. The sternum is a flat bone, situated at the front of the chest, serving as a firm bond of union to the true or long ribs, and to strengthen the arch of the chest.

The Ribs.—The ribs are long curved bones, needing no extended description, as their general form is so well known. They are much curved, the curvature being both downward and outward. All the true or long ribs are firmly fastened by cartilage to the spine and sternum, and therefore not capable of motion, excepting a slight twisting at the extremities; consequently what motion they enjoy, must be formed in the curve at their middle, in its elevation and depression.

Another peculiarity of the ribs is, that their rear extremity is much higher than their front, so that when we look in front of the chest, directly across it, the sight will cross several of the ribs, as they run obliquely downward and forward.

From this arrangement it is perfectly obvious, that the curvatures thus adjusted were designed to enlarge the lateral diameter of the chest, when they were elevated by the proper power to do it, and also that the descent of the front extremity of the ribs was intended to facilitate the elevation of the *whole* chest; thus, in connection with the elevation of the curve of the ribs, very much augmenting the diameter of the chest in case of exigency.

The *short ribs* differ materially from the long or true ribs in several respects, and these differences should, and do, lead to many all-important, physiological, pathological, and therefore practical considerations.

1. First, we notice that the short ribs are loose at their front extremities, being attached to each other by means of cartilage only, leaving quite a space intervening between their front extremities at the pit of the stomach, or *scrobiculus cordis*.

2. Secondly, we notice, as a consequence of the peculiarity just mentioned, that these ribs, unlike the others, enjoy great liberty of motion at their front extremities, in consequence of their cartilaginous connection, and of the space in front, allowing their front ends, on opposite sides, to separate; while, at the same time, they have all the advantages of other ribs, in point of form and construction.

This shows, evidently, that the Creator designed the lower portion of the chest, and that only, to enjoy perfect and extensive liberty of motion, of a fan-like character.

We also see, that in healthy chests, their inferior region is the

largest, as a general rule, even while in an unexpanded and quiet state. (See Fig. 1, which is the natural chest, and Fig 2, the unnatural one.)

What, then, are the conclusions to be drawn from the palpable facts? Let us mention a few.

First, whatever changes the proportions of the chest, or inverts them, whether the cause be natural or inherent, accidental, artificial or habitual, inverts the order of nature, and as we shall show in the course of the subsequent remarks, places a mechanical encumbrance on the mechanical and vital functions of the delicate organs within; and such a person can only be looked upon as unfortunate, and as one more to be pitied than to be envied. When the cause is artificial or habitual, such a person should be considered as lacking in common sense, moral principle, and good taste; that is, when the person is clearly informed upon these points.

Secondly, we remark, that whatever confines the natural liberties of this part of the chest, is a manifest infringement upon the most obvious law of this cavity, and compels other portions of the chest to perform undue exercise, and that, after all, to the depreciation of the function that stands at the head of all functions. The evident consequence of this is, that by degrees, the laws of life gradually give way, and disease of a vital and fatal character will ensue, without remedy. In what light, then, do the *fair* portion of creation appear, who, under the influence of a depraved taste, draw around themselves the suicidal cords that are depopulating the world by millions, or filling it with worthless wives and mothers, securing to society a puny, sickly, short-lived posterity.

But we leave this point here, to resume it again, in the spirit of meekness, and yet with the most decided condemnation

CHAPTER II.

SOFT PARTS—THE INTERCOSTAL MUSCLES—THE DIAPHRAGM.

The Soft Parts.—We have now seen the mechanism of the chest, and what the combination would, individually and collectively, admit of being done, were the appropriate power applied to effect it. But we also see, that it (like other machines, without a power not inherent in their composition) can do nothing

towards carrying out its specific design, because it lacks both the power to will and to do : (i. e.) it is passive in all its functions.

We see, consequently, the necessity of attaching a moving power to this apparatus that shall act specifically and philosophically with reference to the designed motions of the combination, as indicated in its construction. We therefore proceed to examine the soft parts attached to the hard ones, in their active bearings (through their vital agency), and we shall soon discover a perfectly philosophical machine, that has complicated but definite functions to perform, all performed in concert, under the simple influence of those principles that predominate and govern the natural and universal actions of all matter.

As in the hard parts, we shall proceed no further in the examination of *these* parts, than is necessary for the elucidation of our subject, leaving much unsaid and untouched which is important and full of interest.

The Intercostal Muscles.—These organs occupy the space between the ribs. There are two sets of them, an inner and an outer set. They run only from rib to rib, and, of course, each muscle can only act from rib to rib. These muscles pass, from their origin to their destination, by running in an oblique direction, the two sets crossing each other. They constitute that portion of the flesh which we eat of a spare rib of an animal, which in some cases is *spare* enough to be sure.

Let us now seek the specific action of these muscles, and how they accomplish this action.

These muscles are firmly attached by both their extremities to the ribs, the lower extremity to the upper edge of a rib, and the upper to the lower edge of an upper rib ; all the active power they have is contraction, or a shortening of their dimensions ; this power they obtain from the influence of the nerves that preside over those functions, and are not exclusively under the control of the will. But in their contraction or shortening, what will be the exact effect on the ribs to which they are attached ? The curvature of the ribs is downward ; of course, then, the depressed state of this curve is its natural and quiet position, and the only motion left for the ribs is the elevation of this curve. In this case, as the movement of the rib is upward, each upper rib will be the pivot or fulcrum, or fixed point drawing towards itself the next lower rib ; and if the upper rib be the fulcrum at any time, it must be at all times, as the lower ribs are comparatively loose, being fastened only at their rear extremities, while the upper ones are fastened at both.

We are now upon *argumentative* ground, and shall be for some time. We leave this point here, to call it up again, in the subsequent remarks, as the case may require.

The Diaphragm.—This organ is the dividing medium between the contents of the chest and of the abdomen.

It consists principally of fleshy or muscular tissue, its fibres running in different directions. While we proceed to describe the diaphragm, and remark upon its construction and arrangement, let the reader give undivided attention, and draw such inferences (not expressed by us) as grow out of the exposition. Very much of the practical part of the subsequent treatise, depends upon a correct understanding of this organ and its functions.

The diaphragm arises from the lower edge of the short ribs. Let it be noticed here, that the origin of this muscle, at this place, is from a low and fixed point, and that, of course, this point will be the fixed point of action, tending to draw, more or less, the fibres of itself towards that point. This muscle runs from right and left, upward and inward, as high as the pit of the stomach, where the two sides meet like the two walls of a tent, and blend their fibres in mutual arrangement.

The interior or upper extremity of this organ is attached to the breast-bone, the posterior to the back, and the intermediate portion, of course, will be stretched across the chest, without a fixed point, excepting to a thin partition which runs down the centre of the chest, separating between the right and left lobes of the lungs. This membrane is attached or *soldered*, as it were, to the central portion of the diaphragm, where the two upper edges meet. Thus we see that all that tends to sustain the diaphragm from central depression, is this mechanism or membrane above described; it is also obvious that this organ was not designed by the divine Architect to be put upon the stretch with impunity; and it also appears clear, that the great design of this delicate and irritable tissue was to be a dividing medium between the right and left portions of the chest.

Another peculiarity of great importance, in a physiological and pathological point of view is, that the two hemispheres of the diaphragm are very convex above, and concave below. Indeed the lateral inclination or convexity of this organ is well represented by the two hemispheres of an excavated pumpkin—their upper edges approximated, and their lower edges separated.

In that case, the right and left central portions of the diaphragm, (i. e) the centre of their surfaces, are higher than either the approximated edges or any other part, being pushed quite high into the chest. This elevated and convex position is its *natural* position, as is indicated by its being found in this position at the birth of the still-born child, or at the death of the adult, who dies without any organic disease, but by a sudden casualty. In all such cases, the diaphragm is always found so much elevated as to support the heart, and afford even a firm pressure to the collapsed lung which has never been expanded.

We now finish the description of the diaphragm, by saying that each of its two under sides are segments of a perfect dome, and we insist upon its being remembered that *this* is the *natural* position and relation of the organ, both to itself and the surrounding organs, and that no other condition will be natural or healthy, either for its own action or that of the neighboring organs.

We now proceed to notice some collateral circumstances, that should be embraced in the above description.

It is evident from the formation, arrangement and organization of the diaphragm, that it is incompetent to sustain itself in this elevated conical form: for we see that it is very thin, supple or flabby, and that it consists of muscular fibres principally. Of course, in this conical form we can see no way in which this organ can sustain itself in its proper shape. Just as well might a paper dome suspend a mighty weight from its inner surface, without being inverted or destroyed, as for the diaphragm to suspend the abdominal contents, without any auxiliary supporting power. The natural inference that we draw from this is, that the diaphragm was designed to be supported from below, by the abdominal contents, instead of their being supported by, or suspended from it. Let this point be borne in mind as a point of reference in future remarks.

Again, the lower edge of the diaphragm being the fixed point, having a bony origin, and its upper angle being but partially attached to an osseous surface, we of course conclude that the direction of the motion of this organ would be towards its lower angle, either from its own contraction or from the motion of the ribs, from the centre to the right and left.

Again, as this organ is raised so high in its natural situation, we discover that its surface is very much extended, and that it occupies much more space than is embraced in a straight line from its origin to its termination at the centre of the chest, and that when it is *in situ*, or its most natural state, the fibres are most stretched, and not shrivelled and relaxed; they are then just sufficiently distended to stimulate them to contraction, upon the principle of resistance. Let it be remembered that the diaphragm is kept in place by other powers than its own, and that *it* is passive in the matter, and only active in contracting to the relative or abnormal position. This point is also important to recollect as a *primary* one in mechanical or operative physiology. We again remark, that the fibres in this organ do not run in direct lines, but rather in circular ones, tending to a focus in the centre of the chest, or, to say the least, their direction is compound. But one thing is certain, that the lower fibres will be the fixed point, and monopolize the general direction of motion towards them.

In view of these considerations, we are now prepared to

conclude philosophically and rationally respecting the specific action and operation of this organ in its active state.

What, then, will be the natural and specific movement of the diaphragm, when its fibres contract? for it is evident that it has no active operation except by contraction.

The answer is obvious, viz: that, as the surface of the well elevated diaphragm is large, and as its fibres have a circular direction, and its lower point is the fixed one, in contraction of its fibres the whole diaphragm will be depressed, and move towards its fixed point. Or, in other words, the diaphragm, in all of its active functions, descends in its whole surface, and enlarges the perpendicular dimensions of the chest, thus changing the natural relations existing between it and the heart and lungs, to an unnatural one, for the time being. (See Fig. 9, which is the natural Diaphragm.)

CHAPTER III.

THE CONTENTS OF THE CHEST, AND THEIR MECHANICAL RELATIONS AND INFLUENCES—THE HEART—THE MOVING POWER OF THE HEART—THE LUNGS—EXPLANATION OF THE OBJECT AND TANGIBLE PROCESS OF RESPIRATION—INSPIRATION.

The Contents of the Chest, and their Mechanical Relations and Influences.—We now proceed to consider, cursorily, the contents of the chest, in a mechanical and philosophical light. These organs consist of the heart and lungs, which, in health, completely fill the chest at all times, both in the period of inspiration and expiration. This statement needs no argument for its proof, and we would only say, that it is made evident by the fact, that at the birth of all *still-born* infants, whose lungs were never inflated, and at the death of all adults, who have died of any sudden casualty, the lungs have always been found completely to fill the chest, being pressed upon by the ribs round about, and by the diaphragm from below, thus showing that it is a law of all animate combinations, to touch mutually and reciprocally; and to do it in such a manner, that all cavities shall be filled, or, in other words, that a vacuum, or empty space in the trunk, is incompatible with animal or philosophical laws.

Let this law of reciprocal adaptation and support in the trunical organs be borne in mind, as a physiological axiom.

The Heart.—This organ is large and heavy; its size and form are so well known that they need not to be described.

It is the great agent for the circulation of the blood, and is in a state of alternate contraction and relaxation, continued with great regularity while health or life exists. It is situated a little to the left of the centre of the chest, between the right and left lobes of the lungs. It is enclosed in a sack, or thin membranous bag, which covers it loosely. The lower part of this sack unites with the diaphragm so tightly that the knife can seldom separate them. Leaving the physiology of the heart to a future consideration, we will now attend to an important inquiry, viz., How is the heart kept in place? and what are its material relations in combination?

First, as to its relations. It is situated in the lower part of the medial portion of the chest, with its large flat surface resting on the diaphragm below. It is surrounded by the lungs, which are in close contact, so that the relation between the heart, lungs and diaphragm, is completely mutual.

Secondly, as to the power that keeps it permanently in this location, we now remark:—The heart, as we see, is heavy, and suspended in space, and it is natural to inquire what retains it in its relations to itself and all its neighbors. To this question we reply, that it is effected by two powers, acting very differently. One class of them may be denominated suspensory powers; they consist of the heart's ligaments, and the vessels that receive and throw off the blood. Our opinion is, that these act more particularly by keeping the heart steady, than by suspending it. The other power is a supporting one, received from the diaphragm, when permanently raised to its proper height by the abdominal contents, thus allowing the heart to rest considerably upon it, without gravitating so much as to put its suspending powers or appendages upon the stretch. Let this chain of mechanical combinations be critically noticed and borne in mind as we develope it.

The Moving Power of the Heart.—Of the power that institutes and perpetuates the heart's specific action, we only remark that it is derived from a certain class of nerves. The exact mode in which they effect this we know not; but this we do know, that they are exceedingly sensitive and irritable; that the least change in the normal relations excites in them either an undue, diseased, irregular or morbid action, and that the proper function of these nerves cannot be depended upon without the perpetuity of the mechanical physiology.

The Lungs.—These important organs fill up the remaining cavity of the chest, so that, in health, there is neither actual nor imaginary vacuum in it.

In the infant they are small and heavy. After respiration they become very light, so that the largest healthy lung weighs, I believe, but six or seven ounces. These organs are lobated, and seem almost to have no tissue, and to consist of cells,

whose walls are nothing but vanity. They are considered as the grand organs of respiration, but have no muscular tissue, indicating that they have no power to preserve respiration, or the contraction and expansion of themselves. Respecting any primary contractibility in the pulmonary tissue, it is a point not wholly settled; but to our mind it is fully established, that never, in health, is there any primary motion in the lungs (except an inconsiderable elasticity of texture), and that whenever there is such a thing as spasm, or primary contraction in the tissue, it is because of disease, and not when the organ is duly performing its functions. It is true that, at times, tissues in disease will perform actions foreign to the specific functions, therefore we believe that all the sensible and alternate changes which take place in the dimensions or state of the lungs, no matter however natural they may be, are all produced by the influence of surrounding muscular power and atmospheric pressure. The physical phenomena of the lungs, with reference to respiration, consist in their expansion and contraction, their other functions being under another set of laws.

Respiration consists in inspiration and expiration,—i. e., its physical phenomena. We will here give a didactic signification and description of respiration, and then proceed to inquire how each branch of this function is effected.

Explanation of the object and tangible process of Respiration.—The blood, when it leaves the heart, on its left side, is distributed throughout the minutest fibres of the human system, by means of vessels adapted to that purpose. This blood leaves the heart in a red, rich and fructifying state, every way calculated to repair the waste of use in the system. It travels on through infinitely small vessels, when, by a law inexplicable to us, the different fibres and organs suck, or select out the required material from the blood, and soon it merges again into another set of vessels, which become more and more visible. The vessels through which the blood is carried to the extreme parts are called arteries, while the vessels that receive again the blood and convey it back to the heart are called veins.

There is a great difference between the blood in the veins, or the returning blood, and that in the arteries; instead of its being red, rich and fructifying, it is black, impoverished, and comparatively cold. The system has exhausted it of all the wholesome properties, and appropriated them to itself. The chief of these properties are oxygen, which is supposed to be the stimulating and warming principle, and nutriment, which is the repairing and building up principle.

Now, in the circulation, these have been taken away, and in return the system has deposited a black, deleterious substance, called carbon. And now the blood is travelling back, on its way to obtain a fresh supply of the nutriment and of the oxygen,

and to unload itself of the carbon. It left the heart from its left side, but returns to a cavity in its right. From thence it is ejected to another receptacle in the same side, and then into certain vessels called pulmonary arteries, by which it is carried to the lungs. Here the carbon is detached and replaced with oxygen: this is accomplished by the infinitely numerous air vessels of the lungs, receiving it thus widely distributed, and bringing it, by an exceedingly thin tissue, almost in contact with the air. Here by a chemical process, the atmosphere takes up the carbon, and gives, in exchange, the oxygen required. The blood then returns to the left side of the heart, from whence it first started, and is again thrown into the system, fit to minister to its wants.

When the blood enters the lungs, or comes up to the *cells*, they are expanded to their utmost, the little cells being all dilated with atmosphere, so that there is a large surface of the blood presented to the atmosphere. After this the lungs are instantly contracted, and the cells comparatively closed.

This opening to admit the air, and shutting to eject it when impure, are called, inspiration and expiration; i. e., "breathing in and breathing out."

We have given a general definition and explanation of the object and process of respiration, as divided into inspiration and expiration; we now proceed to inquire by what means or powers these two processes are effected; keeping in mind the fact that the lungs cannot exercise any agency in their own contraction or expansion.

Inspiration.—The object of inspiration is to fill the lungs with air. But how shall this be done? for, when the cells are compressed, the lungs entirely fill the cavity of the chest, and the lungs have not the power in themselves to accomplish this. Of course something must be done externally; first to make room for the lungs, and then to expand them with air.

We will now inquire how this expansion of the chest is to be effected. We see that the change evidently must take place in the capacity of the chest, and that the lungs cannot produce this change, neither can the bones or ribs of themselves move, although they are capable of *being* moved, when a moving power is applied. To the soft parts, or appendages of the chest, we must, then, look for this power. We now turn to the intercostal muscles, to see what may be expected from them. When the child is born, if he stay long, he must necessarily breathe. Accordingly upon birth, agreeably to the law of the animal constitution of the fibres, the intercostal muscles shorten, and of course pull up the curvature of the successive lower ribs.

As the result, the ribs of each side diverge and enlarge the chest, in a lateral direction, producing a vacuum between the

lungs and ribs. At the time of the contraction of the intercostal muscles, the diaphragm, by virtue of the same laws, takes upon itself *its* specific action—its fibres shortening in every direction, and, as we have before shown, draw down its convexity, in the most philosophical and mechanical manner imaginable. By this action the diaphragm is drawn away from the lungs, and their perpendicular capacity is increased. But co-existent with the very commencement of the enlargement of the chest by the intercostals and diaphragm, the principle of atmospheric pressure begins to act, and to fill up the vacuum as it is formed, passing into the nostrils and mouth, and forcing its way into the closed cells of the lungs, distending them to the utmost of their capacity.

The lungs are now supplied with oxygen, and the cells distended with air, so that the blood can pass freely up to the atmosphere for purification. This is inspiration in its length and breadth—being, at the same time, a mechanical, chemical and vital action.

But the air in the lungs has now become impure, and its exit is demanded, to make room for a fresh supply, so that *expiration* has become now as necessary as inspiration was. The lungs must be again contracted to expel the air within them. This the lungs have not power to do of themselves, neither will the air voluntarily leave them.

We naturally look for the accomplishment of this to the intercostal muscles, but here we can find no aid. Some physiologists say, that one set of the intercostals draws up the ribs, enlarges the chest, and facilitates inspiration; and that another set, running in an opposite direction, draws them downwards. This they infer from the fact of their running in opposite directions. Let us examine this matter. We see that both extremities of both sets of muscles arise and are inserted into the same ribs, differing only in this, that they run in different directions. It is evident that, in all cases, the successive upper ribs (being curved downward) will be the point of motion, and that the motion, beginning at the upper extremities of the muscles, will extend downwards, until it reaches the next rib, which will be thus drawn up—both sets of muscles drawing alike—one as much as the other, but in opposite directions.

But it is alleged that, in inspiration, one set only contracts, and thus elevates the ribs; and that, in expiration, the action is reversed, and the other set contracts; the lower ribs being the fixed point for that set, and drawing down the upper.

This we say cannot be, as the contraction of the first set approximates the ribs to some extent by shortening themselves; of course, then, if the other set do not contract *actively*, they will be contracted *passively*, and have their dimensions necessarily shortened. Now, as all specific action of muscles de-

pends upon the shortening of their fibres, of course, these muscles cannot pull down the ribs, as they are already contracted. Again, suppose we take India rubber slips of equal length and strength, and attach them to two bodies (having them run across each other) of equal size and strength, but the upper one the most immovable. Although these run in opposite directions, will not one, as much as the other, draw the lower—or loose body—to the fixed one? While these two are in opposite and oblique lines, the body will be drawn in a direct one. In view of these natural principles and facts, we see, that except we give both the power of *pushing* and *pulling* to the muscles, we cannot find any way by which they can pull down the ribs at all.

We have been particular on this and some other points, as much depends upon the conclusion we come to here, and as many learned men think to the contrary, and are slow to give up their points, however clear it may appear to others.

We now see that if the specific action of the above organs is to pull up the ribs, it cannot be to draw them down also. We see, also, that we cannot find in either the lungs or intercostals, the power of expiration.

There are several large and powerful muscles situated on the back and breast, but it is obvious that their principal use is to strengthen the back, and to give power and efficiency to the movements of the arm, shoulder and head.

But when they *do* operate upon the chest, it is evident that their fixed point is above, and that the tendency of the action is to enlarge the chest, as in sneezing, hallooing, or laborious respiration, as in asthma or extreme fatigue.

We are thence driven to the ribs, and here we find some physiologists ascribing great expiratory power to them, as in inspiration they are drawn up to an unnatural position, they will, according to the view of the persons referred to, tend to draw themselves back again to a natural position, and thus effect a compression of the lungs, producing expiration. This is indeed true of the ribs to a greater or less extent, but not to the extent supposed. It is obvious that the elasticity of the ribs is very instrumental in effecting moderate and involuntary respiration, in ordinary life or sleep. But what we are looking for, is the *power of expiration* in the abstract, (i. e.) the power of coughing, vomiting, hallooing or blowing upon wind instruments, and, until we find this, we have not found the object of our search.

Now, if this elasticity of the ribs were sufficient to perform these functions, let us see what results would follow.

The *elasticity* of the ribs, or of any other tissue, is inherent and involuntary, not being under the influence of the will; (i. e.) it cannot be either augmented or diminished by the will.

Well, then, as it requires very much more force to sneeze halloo, &c., than it does in ordinary respiration, of course, if this incontrollable elasticity be able to produce it, then we may be compelled to perform some one of these violent exspirations continually, as the will cannot diminish this involuntary influence; and this would be ridiculous. As yet, then, we have found but a very inconsiderable expiratory power. We will here notice one muscle of the chest that *does* assist in expiration, so far as it can exert *any* power upon the chest. That is the *sterno-costalis* muscle. It arises from the inferior extremity of the breast-bone, or sternum, and runs directly up on the inside of the chest to the third and fourth ribs, and is inserted into them.

This muscle is small, and runs so close to the ribs that it has little leverage; but what it has, it exerts in drawing back the front and inferior extremity of the chest.

We are still without anything like an *adequate* expiratory power. We now pass to the most probable remaining cause of this phenomena—the *diaphragm*.

This organ, by some physiologists, is called a suspensory organ for the abdominal organs, and the great organ itself of expiration.

We will here stop, and consider another philosophy of expiration, mentioned by some physiologists.

They say that the intercostals draw up the ribs and enlarge the chest; that the air then rushes in and expands the lungs, crowding down the diaphragm. Of course, the abdominal organs necessarily distend the abdominal muscles; these reacting, press back the abdominal organs, and these crowd on the diaphragm, producing expiration. This is true as far as it goes; but as the power of which they speak is the inherent elasticity of the muscles (not under the control of the will), of course it must be viewed in the same light as the elasticity of the ribs, aiding in the production of the same function, viz., moderate involuntary respiration.

We now look to the diaphragm in quest of the expulsive power.

It is quite a prevalent opinion among some *great men*, that the diaphragm is the great expiratory agent, and the organ chiefly implicated in vomiting and other morbid and natural movements of this class.

Let us examine this opinion. The diaphragm is so constructed that a contraction of its fibres will diminish its surface and lower its natural convexity. Now, as the natural function of this organ is to draw itself out of place, and shorten its fibres, of course, the more they contract, the lower will it descend; As, then, the diaphragm has no active power but contraction, and we see what this contraction has accomplished, how, in

the name of common sense, can a farther contraction of that organ push it back from nearly a straight line to a curved one, or a conical shape?

Seeing, then, that this muscle has not the power of *pulling* and *pushing*, it is plain that it cannot exert an expiratory power of itself. But some say, that inspiration expands the ribs, and puts the diaphragm upon the stretch, so that it contracts and draws inward the ribs. This cannot be, as no muscle can draw itself into a curve or cone.

In this view of the subject, we can see no propriety in ascribing any suspensory or expiratory power to the diaphragm.

We have now considered all the rational actions of every pectoral tissue, both soft and hard, and we find no power adequate to the function of expiration, and we are compelled to conclude that the chest does not constitute a perfect respiratory apparatus, lacking especially in power of expiration.

Keeping in mind that we have not yet discovered the object of our search, viz., the power of expiration, we will turn our attention to another portion of the body, the examination of which may throw some light upon this subject.

CHAPTER IV.

THE PELVIC ORGANS AND WALLS—THE URINARY BLADDER—THE UTERUS OR WOMB—THE ABDOMINAL CONTENTS AND WALLS—THE VISCERAL LIGAMENTS.

The Pelvic Organs and Walls.—Of this *cavity* little need be said, save that its walls consist entirely of bones which are immovable, and that the cavity is of a very irregular shape. But of the *contents* of this cavity very much that is interesting and important may be said. These consist of the *urinary bladder*, the *rectum*, a lower bowel, and *uterus* or *womb*, in the female subject.

The Rectum.—The *rectum* is the lowest extremity of the large bowel, and is contained in the lower cavity of the human trunk, called the *pelvis*.

This organ is large, and bound down to the inner face of the sacrum or rump-bone (following its course), by a slip of the lining membrane of the belly, which dips down into that cavity, and is reflected over that organ, and also by a texture, called *cellular tissue*, which loosely connects it with the surrounding parts.

The inner membrane of this bowel has a more extensive surface than the outer coat, and consequently lies in folds.

Of the Urinary Bladder.—This organ is very thin, and capable of holding from half a pint to a quart of fluid without very great uneasiness. When empty, it lies nearly within the pelvic cavity; but when full, it rises above the brim of the pelvis to accommodate itself in distension. It is situated in the front of this cavity, and is retained in this place principally by cellular tissue, binding it to the under surface of the *pubes*—a prominent front bone on the extremity of the trunk. Little need be said of the particular form, motion, attachments or functions of these organs, excepting with a reference to the mechanical relations existing between them and the abdominal organs.

The Uterus or Womb.—This organ is situated between the rectum and bladder, suspended in space, as it were, near the centre of the pelvis. Capable, as it is, of a very large expansion in the impregnated state, it is exceedingly small, being scarcely one inch in thickness, two in width, and two and a half in length, weighing but two or three ounces. A natural inquiry now presents itself—What sustains this organ in place, or what are the supports which this organ enjoys?

We reply that they are five in number. 1. It is sustained pretty firmly by the *vagina*. The *vagina* is a curved canal, that communicates from the external world to the uterus. It is very elastic, and in health is contracted upon itself, so that its inner surfaces touch each other. This canal is situated below the womb and supports it. Indeed Dr. Dewees considers it about adequate to sustain that organ, and to be the chief support assigned to it.

2. The next support that we notice is the *cellular tissue*, which surrounds the organ, intervening between it and the adjoining parts. This constitutes a support to a considerable extent.

3. The next two supports are called the round and broad ligaments. They consist principally of slips, or portions of the peritoneum, or lining membrane of the belly, which dips down into the pelvis, and passes out again, somewhat as we shall describe. The *round* ligaments arise from the sides of the uterus, and constitute cords of considerable size and strength; they pass off to the right and left, and ascend obliquely, passing out of the wall of the abdomen, about two inches above the groins. They then descend and are permanently inserted into the groins. This, as it will be seen, must be a suspensory support.

4. The *broad* ligaments arise from the upper and back part of the uterus; they are larger than the round, and are flat, being dispersed chiefly over the small of the back, and inserted there. This support is evidently designed to suspend this organ also, and to retain it in place.

5. The fifth support is a broad reflection of the peritoneum over the top of the uterus, which then reascending up the sides of the abdomen constitutes no inconsiderable support in preserving this organ in its normal relations.

Now, much is to be learned from this arrangement of supports, viewing them collectively and individually. We see the number of these supports, and that they all are efficient. Considering the small size of the uterus, we see that the amount of support lavished upon this organ is greater and more efficient, comparatively, than the supports or ligaments attached to the liver and other organs of the abdomen, although these organs are at least ten times as large and heavy. Looking at the *minutiae* of the uterus and the *magnitude* of the liver, stomach and spleen, in connection with the strong and multiplied supports of this small organ compared with those of the large, we are led to conclude that something is specially to be inferred from this, of a pathological nature.

After investigating the subject as far as we are able, we have been led to the following deductions.

1. That these supports were not all lavished upon this organ merely to sustain its nominal weight, but that there are, at least, triple functions for them to perform.

2. They are, first, to sustain the uterus in its specific weight. Secondly, they serve as a floor upon which the abdominal organs may rest, or at least, they are designed to sustain the amount of weight produced by the small intestines situated below the *mesocolon*. And thirdly, to act as a reserved support for the *uterus* in the first four or five months of pregnancy, while as yet the organ is within the pelvis, and is several times heavier than in the unimpregnated state. When we take this view of the subject, we are lost in admiration of the creative wisdom of Deity.

The reader has discovered that we do not believe that, in health, the uterus or abdominal walls require all the power they have, and consequently that there is a surplus for other purposes. But should any one contend that the healthy unimpregnated female does continually demand all these supports, then we ask, what will become of the same female, when the uterus is borne down with the *ovum* of considerable weight? Surely, in this case, if there was no more power than was requisite before, a distressing falling and dragging of that organ would be the *unavoidable* consequence, in accordance with one of the most common laws of nature.

This conclusion all will admit to be just. But here a fact comes up, which gives a *decided* feature to the matter, viz:—Were all the cases of gravid or impregnated uterus arranged in one row, it would be found that nearly half of them would not complain at all of prolapsus, and, indeed, we have not unfre-

quently been called to decide whether the patient was pregnant or not, as she felt none of the common unpleasant sensations. Now this could not be if the organs, in their natural state, had no surplus strength. But further: were all the cases of prolapsus drawn up, rank and file, it would be found that about three quarters of the cases would consist of unimpregnated ladies, and that *one-third of these* would consist of virgins. This statement has been sustained by a large personal observation in practice.

Now with this fact before us, admitting that nature did design to sustain the gravid uterus in the first four months, by the reserved strength contained in the five uterine supports, and seeing that they are commonly able to do it, how can we account for prolapsus in the unimpregnated and virgin state, when there is nothing but the normal weight for the ligaments to sustain; for the uterus then has all the advantage ~~of~~ the support held in reserve for the pregnant state? Only can this be accounted for by admitting that prolapsus is caused, not by a deficiency of the normal suspensory supports, but on account of the *superincumbent* pressure from above, as we shall show hereafter.

We now ask, What are the pathological inferences to be drawn from these facts? We answer, that *prolapsus uteri* is not a *local* or *primary* disease of the organ or region affected; but on the other hand that this organ is passive in the matter, excepting in its reaction.

The treatment of this complaint, then, should be directed to the removal of the burden from the womb and its ligaments, and not to the locality of the diseased phenomena.

And also, we observe, that the usual treatment of this disease by the unpleasant and painful use of the pessary, is neither physiological, pathological, successful nor decent.

We now leave this point, to refer to it again, at large, in our treatment of prolapsus, when we speak of the morbid state of the human trunk.

The Abdominal Contents and Walls.—We have now examined both the *pectoral* and *pelvic* cavities in all their *gross* mechanical relations, and have found that the chest, to say the least, is an imperfect respiratory apparatus, and that (although *perfect* in its arrangement and design) it is dependent upon some other parts of the body for the effectual carrying on of its functions; and finally, that although the pelvis is independent of the abdomen, or any other part of the body (to a great extent) in accomplishing its specific functions, yet it is subject to encroachments and derangements, when other parts, not directly concerned in its functions, become deranged.

Let us now proceed to examine the abdomen and its relative functions, and see if we cannot find in it the secret of human

animal harmony, whereby every cavity, organ, and set of organs, are enabled to perform both their individual and collective functions, thus illustrating this great truth, that man was originally a perfect mechanism, and that health and perpetuity depend upon the preservation of this perfection in its combination.

The contents of the abdomen consist of the stomach, liver, spleen, the large and small intestines, and other minor organs

It will be recollected, that, in the investigation of the chest, we left the diaphragm crowded up quite high into a concave form, like two segments of a cone, and that it afforded continual support to the heart and lungs.

It will also be recollected, that we showed that this organ had not power of itself to retain this position even, much less to support other bodies, or be a suspensory power to the abdominal organs. Keeping these points in view, we will now present the reader with the abdominal viscera in all their individual and combined bearings and functions, so far as is necessary for the elucidation of our subject.

The *stomach*, *liver*, and *spleen*, are situated at the superior portion of the abdomen, between the corresponding short ribs—in that portion of the chest which is moveable and distensible. In the dead subject, we find that these organs are always in perfect contact with the diaphragm—so close that there is neither an imaginary nor nominal space between them. This indicates that such is the *natural* relation of these organs to the diaphragm, and the *only* natural one. It is also worthy of remark, that the upper surface of these organs is exactly adapted, in shape or convexity, to the lower concave surface of the diaphragm. From the lower surface of this latter organ are thrown off ligaments to the organs over which it is thus spread. *Ostensibly* these ligaments were designed to suspend these organs, but we have seen that this cannot be the case; therefore we conclude that their principal use is to steady them, and maintain them in their due position.

That there is considerable weight in these organs is obvious, and also, that they are *apparently* situated at the wrong end, also, of the cavity that contains them, as now, they are *suspended*, while at the bottom, they might be supported.

Of the specific *vital* functions of these organs we need not speak, until we come to the consideration of their morbid relations.

Immediately below these organs, are appended the intestines, large and small. They have attachments to each of the three organs mentioned above.

The chain of the intestines is about six times the length of the human subject, and is very supple and flabby. We thus find not only the stomach, liver and spleen, without support, but we see the whole intestinal mass appended to them, with-

out any ostensible support. How, then, the inquiry arises, are these organs sustained *in place*?

The Visceral Ligaments.—We find the abdomen lined with a thin, shining membrane, very vascular and irritable. This membrane (called *peritoneum*), in a singular manner, throws parts of itself into the centre of the abdomen, and over, and around all the furniture within.

Any one who is curious to understand this point, can get a good idea of the matter by noticing the arrangements of the abdominal contents in a butchered animal, and their attachments to the back and sides by their leaves or *strithins*. These are the reflections of the *peritoneum*, from the back and sides.

It would not be in consonance with the character and object of this work, to enter into a minute description of all the attachments of these organs, by which they are kept *in situ*. We remark generally, that all these organs have a determinate place or orbit, which is their *only* proper and healthy position. Again, the fact of the strongest and healthiest attachments not holding the organs in an exact relation, but allowing of motion, does not invalidate the above position, as we only contend for a specific *orbit* for each organ, which will allow an accommodating range, but not so wide or long continued as to draw permanently on the normal relations of the other organs. For illustration, take the axletree of a carriage. Its orbit is within the hub, yet it does not completely fill it, and *must* not, to preserve the office of the wheel. But this does not prove that an axletree of a *determinate* shape and size is not necessary to facilitate this operation.

This applies to the intestines, in answer to the argument, that the mobility of them, and the elasticity of the muscles, indicate that the healthful specific functions do not depend on the certain position, or that they may undergo any geographical derangement with impunity. We have been referred to the case of the protrusion of the bowel in ruptures, but in this case, so far as the inference is true, it only exhibits the large limits of the orbit or sphere of action. But be it known, that the very case cited comes in, in the aggregate, to prove our view of mechanical harmony; for although a person may not die from a permanent or casual rupture, yet such an one suffers the most distressing sensations. Indeed their symptoms are exactly what we would expect from such a relative position of the organs.

This membrane (mentioned above) runs over the under surface of the diaphragm, and sends ligaments to the convex surface of the *stomach*, *liver*, and *spleen*, thus ostensibly suspending these organs from the diaphragm. This membrane is also sent into, or partially across the abdominal cavity, like a shelf in the shape of a “*half moon*.” This tends to assist in retain-

ing the mass within its appropriate range of motion. In addition, it sends folds of itself from the back to the intestines, coiling them up like a ruffle, and shortening their geographical dimensions.

But this attachment of these organs to the back is very loose and accommodating, allowing more range of motion in them than is proper or natural. Besides, the *small*, and a large part of the *large* intestines are below this shelf above described (called the *mesocolon*). This general description shows, that after all the natural attachments of the abdominal organs, their specific gravity will perpetually tend to displace them, and draw them out of their *orbit*, in the human system, leaving the mass to call still for infinitely more support from the diaphragm, than it is either designed or able to afford with impunity.

Of course, then, we must look for an efficient power that will prevent a laxity of the bowel, unnatural tension of the ligaments, inversion of the diaphragm, and improper violence on the tissues of the furniture, in ordinary or accidental movements of the body. And we here repeat, that this power we lack as yet.

We have now examined every tissue as we passed along, with reference to their tangible, natural and philosophical effect on the surrounding or connecting matter or parts, and find that sufficient support is both lacking and impracticable, acting suspensorily, and we now proceed (as a *dernier ressort*), to find the requisite power, from below, of a *supporting* character.

In looking for this power, we should philosophically expect to find it in an opposite direction to the suspensory power, (i. e.) directly below the pendent organs. This support we might expect, at first sight, to find in the projecting hip bones below, which stand out like a basin. But there are two or three circumstances which invalidate the efficiency of their support.

I. The lining membrane of the abdomen across this basin, dividing between the organs of the upper and lower cavity, forms a natural floor for the abdominal furniture to rest upon.

The back or rear surface of this floor is one or two inches higher than the front edge, so that this floor forms an inclined plane, tipping forward and downward. This floor is very smooth, and of course, when the bowels fall or rest upon the basin for support, they will not find a sure resting-place, but will mechanically fall forward on this smooth inclined plane, and be rolled towards the bone in front, and the abdominal muscles; this is what gives the usual rotundity to the abdomen. But did this bone stand out flat or horizontally, the support given would be far different and more efficient.

II. Such is the weight, number and length of the pendent contents, and such the distance between the diaphragm and this bony basin below, that were there ever so much support

here, there would be an unnatural elongation of them, and a consequent dragging from the diaphragm.

III. Were the pelvis even much nearer the diaphragm than it is, such is the size and mobility of the mass, that there would be a lateral displacement of it, were there no other power to assist, and thus there would be induced a dragging upon the diaphragm, in consequence of a want of surrounding support.

We have now examined all the suspensory power from above the abdominal mass, and all the supporting power directly below it, in all their possible facilities, and we find, as yet, no sufficient support and protection for the mass. There is now but one more tissue to which we can turn with any hope of success upon rational grounds, and that is the tissue of the abdominal walls, and its action.

CHAPTER V.

ABDOMINAL MUSCLES.

Abdominal Muscles.—As the last resort, then, we turn to these in quest of some power that shall philosophically complete and preserve the mechanism of the human trunk, and if we fail here, then we shall be forced to ascribe man's physical perpetuity to some unknown or divine interposition, still intangible to human reason.

In this view of the subject we shall approach its examination with great care and interest.

These walls, very unlike the walls of the other two cavities, consist almost entirely of fleshy tissue, and on this account the abdomen may be said to be a vital cavity, situated between two bony ones. Again, it is the largest of the three, and contains the greatest mass and number of organs. Before we proceed, let us repeat, that the power we are looking for is one that perpetually and flexibly lifts up the whole truncal mass, acting in an upward and backward direction, preserving the mass in one determinate form and relation, rendering it portable with impunity.

When we contemplate the abdominal muscles, at one glance, we see them possessed of and acting in a threefold capacity.

I. They serve as a limit or boundary to the form, acting as is required, just as an inanimate boundary of a proper form would. But were this all, that is, were there no vitality or

motion in them, but a mere mass of inflexible matter, what would be the consequences?

The answer is obvious. Let them fit ever so well, there would be great danger of injury, for the bowels have no given dimensions, but vary with circumstances, and were their walls composed of bone, it is plain, that in cases of starvation or casual emptiness, the abdomen would not be full, and, of course, there would not be exerted the proper apposition between the bowels and muscular walls. As the result of this, there would be a general hanging and gravitating of all the organs, producing its specific and natural effects. There would also be exerted a stretching, which is unnatural, and tends to fracture, besides many other necessary effects. Or, on the other hand, in case of great sudden or casual fulness of the bowels, there would be no elasticity in these walls, whereby to give way and accommodate the new condition. In that case there would be produced great pressure, obstructing the circulation, and, in short, inducing a host of fatal effects, perceptible even by an ordinary mind.

II. We see that the walls of the abdomen must be as they are, of a flexible character, unlike the walls of the other cavities. And here may we be permitted to ask the *religious* attention of every reader, to these wise and benevolent arrangements exhibited in our creation and preservation, and these will be more apparent as we proceed to speak of the remaining characteristics and functions of these muscles.

Let us then contemplate these walls in the light of *vital* organs, susceptible of motion and change as circumstances may render necessary. We see that besides being matter of a proper shape, they are *animate* matter, with the inherent power of shortening and being elongated. This is called the contractility of texture, and is not under the control of the will, but is an involuntary action.

Shall we notice the advantages of this peculiarity? In addition to the supporting *passive* properties of an inanimate wall, they accommodate the bowel in every degree of fulness or emptiness.

If disease or want of nourishment causes great emptiness and diminution in the size of the abdominal contents, these vital contractile walls draw or follow up, and maintain a comparative fulness and firmness, thus preventing a sense of vacancy, emptiness, and dragging in the cavity. Or if indulgence, disease or accident have enlarged these organs very much beyond their usual dimensions, then the muscles distend themselves, thus avoiding a fatal compression, or the uncomfortable sensation that must necessarily follow a contrary state of things.

We see, then, that in fulness and emptiness, we preserve

nearly the same relative position (in health), in consequence of this vital quality of these walls.

III The third property of these walls is, that they consist of a series of parts, or distinct organs, mechanically arranged, each part having its specific functions to perform, the whole having a collective and individual set of functions to superintend. Let us now examine these walls with reference to this last property, look into the arrangement of the parts, and observe the mechanical influence of each and all of them.

These parts are called muscles, and are distinct slips of flesh of various but determinate sizes and shape.

In this description and examination, we shall not be particular to speak of their exact origin and insertion, as this would be unnecessary and beyond the object of the present work, but shall speak in *general* but correct terms, saying only what is necessary for the elucidation of the subject.

The first muscle to which we call attention is the *transversalis* muscle, or one that runs and acts chiefly transversely on the abdomen. This muscle arises from the haunch or hip, and back bones. A portion of this muscle runs upward, and is inserted into the edge of the lower ribs; but the larger part of the fibres run in a circular direction round the body, their extremities meeting in the centre and front of the abdomen, where the fibres mix and are so much compressed as to become white, as any one may see when an animal is cut open. This is called the *linea alba*, or *white line*. We see that this muscle arises from the base of the abdomen, and from the back, and that it is fastened at the ribs and in front of the abdomen; and as the lower and back part of this muscle will be the fixed point, of course the pivot of motion will be behind. We see also that this muscle extends like a sheet from the base to the top of the abdomen. What will be the natural action of this muscle on the furniture within, upon philosophical principles? Let us see. Some of the fibres run from the base to the top of the abdomen, or bottom of the chest. Of course, whatever action these fibres exert, will be to draw down the ribs, and thus contract the chest. But as the fibres run chiefly round the body, the *principal* action will be to support the abdomen and diminish its size by the inherent contractility or elasticity of its fibres. But as Dr. Wistar has it, "its proper action is to diminish the capacity of the abdomen, and so perfectly does it do this, that it might not improperly be called the constrictor of the abdomen."

From this description it is evident that the organs derive great support from this muscle, it keeping them well compressed. But it is also evident, that it acts in a posterior or backward direction, not lifting, but pressing about as much downward as upward; and thus dragging upon the diaphragm,

presses some of these organs on to the womb, bladder and rectum, mechanically displacing them.

This shows that were there even ten times more power in this muscle than there is, it would not fill the requisitions or indications of nature, in giving a general upward direction to all the organs.

We have now found the first power of expiration or the contraction of the chest, in those fibres that run up to the ribs.

The next muscles to which we call attention are the internal and external oblique, of which one set extend from the hip or fan bone and back, and run obliquely upward, and are inserted into the lower ribs, but most of *their* fibres run into the white line at the foot of the abdomen; the other set arise from the lower edge of the ribs and from the back, and run obliquely downward, and are inserted into the white line and pelvic bones. Now, what is the most obvious use of these muscles, judging from the direction of their fibres? We answer, first, that they add to the boundary mass, and strengthen the walls. Secondly, when they are healthy, and exert only their native elasticity, they act as braces at each side to keep the back bone straight, as a ship's stays retain the mast in its proper position. And again, when they contract, both at once, they tend to pull down the ribs, and contract the chest, aiding still more in expiration, and also in bending the body forward. But if one only contract, then the body will be drawn to one side. We should especially notice that these muscles, in a supporting point of view, act much like the transversalis muscle, viz., in a backward and not in an elevating direction. We wish to have it here observed, that we are fast gaining the power of expiration, so far as the contraction of the chest is concerned. But we yet lack the power whereby the abdominal contents are to be perpetually rolled upward from off the bladder, womb and large bowel, the diaphragm and heart sustained, and all the trunical organs kept in a close and portable contact. It is however evident, that on the whole, the connected action of the three sets above mentioned, rather tends to the upward action. I should also remark, that when the descending oblique muscles, which run obliquely downward and inward to the centre of the abdomen, act, they *tend* to elevate the abdominal mass.

The next muscle is called the *rectus abdominalis* muscle. It arises from the front of the *pubes* (or projecting bone at the base of the abdomen). It is shaped much like a suspender, and is a beautiful muscle. It runs up the front of the abdomen, and is inserted into the lower extremity of the breast bone, at the pit of the stomach. This muscle is three bellied; (i. e.) it is divided into three parts—the upper, middle and lower, by a white, tendinous substance, which cannot contract.

This muscle is under the control of the will, and can be made to contract in its whole length, or in either one of its bellies. What is the use of this muscle? We answer: its action will of course be confined to the front of the abdomen, and to a perpendicular direction. Its effects are various and multiplied. First, when it acts in its whole length, it draws down the breast and compresses the abdomen, throughout its course. More especially does it bend the body forward, as its lower end is the fixed point.

But, if the muscles of the back antagonize, or draw the body in a contrary direction, then the bending action will be neutralized, and the body made more erect. But even in this case, this muscle exerts a very important and unequivocal influence upon the abdomen. For, when this muscle contracts, and does not bend the body, its specific action will be exerted upon the lower belly, by the extremity of the muscle; or the will may act alone on the lower fleshy part.

Now it is obvious, that when this muscle acts at its lower extremity only, it of course can only affect the lower capacity of the abdomen. Then, whatever contractile power this muscle does exert, will give just so much preponderating power in the upward and backward direction.

Here, in a special manner, do we begin to find the second expiratory power; for while the other muscles tend to draw down the ribs, producing all the necessary active contraction of the chest, and gently elevate the organs within the abdomen, this muscle more *effectively* raises them, thus causing a compression of the diaphragm by their perpetual ascent. By this means a compression of the lungs is produced, the air passively expelled, and respiration necessarily effected.

We have now not only found a power whereby all the furniture is supported and compressed, but also a power by which they are directed upward to sustain each other.

We now proceed to consider another muscle, which is the last, and whose action places the view we have taken beyond a doubt. We refer to the *pyramidalis* muscle, so called from its resembling the pyramid in its shape.

Its broad base arises from the bony protuberance in front, that is, the *pubes*, and it runs up only about half way to the navel, where it diminishes to a point. Of course this muscle can have no other action than to contract the abdomen within its own sphere.

This muscle, in connection with the individual and collective action of the other muscles, will give a most decided upward direction to the abdominal organs, and will do this just in proportion to the laxity or firmer tone of the muscles.

We have thus finished our philosophical remarks upon the mass and different parts of the abdominal walls; and now we

ask you, reader, with the abdomen of a healthy man or child before you, contemplating its round shape and the arrangement of its muscles, if it is not evident that these latter organs give shape to the abdomen, and serve as a binding link to the whole trunk? Do they not preserve the perpetuity of the *one only* natural and healthful relation of the different parts, whereby each and all perform their several and collective functions? Do they not act as a band to a bundle, keeping all the contents in a portable condition; and do we not see that without their healthful and efficient action, the whole mechanical physiology would be broken up?

We have thus far attempted to show that these organs effect their purpose perpetually through their natural elasticity or involuntary action. But in addition to this, these organs have a voluntary contraction, which is under the control of habit and the will. This is proved by our own senses and consciousness, and by physiological inferences.

We see that these muscles are the actual organs of respiration, as has been before hinted; and also of vocality in every healthy degree. The manner in which they accomplish the latter, is the same as that in which they effect expiration, that is, by pressing upon the lungs through the medium of the abdominal contents, then suddenly contracting, eject the air. To prove this, let any person stand at ease, and place his speaking organs in a passive state, then with his hand, let him gently strike or raise up the abdomen, and a monosyllable will be produced, which will be natural and of a key corresponding with the position of the vocal tube and the muscles of the throat.

But again, this point is made still more clear by comparison and analogy.

For instance, observe the swine as he goes grunting along the road. Watch him! See how his flanks begin to move near his hams, and see how they work forward towards his chest, as though something was drawn suddenly around him, diminishing his abdomen! Thus the abdominal mass is suddenly pressed forward against the lungs, expelling a deep guttural sound, with *no effort of the chest*. When he squeals, we see the same principle even more evidently illustrated; *he never becomes hoarse*. See the cow when she lows; how she extends her nose, straitening her air passage, and how her abdomen is raised and thrown forward toward the chest, mechanically expelling the air and producing clear and deafening sounds. When the sound ceases, the abdomen falls back into its former place. The same is seen when the *horse* neighs or respires after the chase; his flanks are alternately and rapidly expanding and contracting, and his breath and sounds correspond with these movements.

When the *dog* barks, his *chest* is nearly passive, but his flanks

suddenly contract as often as he *speaks*, working up towards the abdomen. This animal is remarkable for his almost endless and incessant vociferations, and yet, neither he nor the animals mentioned before, are troubled with the *bronchitis*, or become hoarse.

But we are not left to the light of analogy or comparison alone. Let us return to the human subject, where nature has never been perverted by habit or mistaken art. Take the cases of the untutored Indian and the healthy child. Contemplate for a moment the wild, independent son of the forest. See how erect he stands, how noble and firm his form, and how elastic his abdominal muscles! When he runs (often from morn till night), in the chase, without food, see what he does!

As his abdomen becomes empty, and his viscera cease to fill effectually the cavity, he draws up his belt and brings the abdominal walls together, thus maintaining a perfect apposition of all parts, and keeping up a support of the heart and lungs.

When he sings, see how erect he is; how he elevates his head, and how wide he opens his mouth! His sounds are clear and deep, as if from his stomach, while he scarcely moves his lips. Every intonation gives the idea of a power below, *boosting* out the sound, and not that of a flat *Yankee* sound, which apparently is created between the teeth, and in the nose.

He does this by voluntarily contracting and relaxing alternately the abdominal muscles at each sound and interval.

Let us now look at the child. Here we may expect the most natural of all motions and effects, for it neither *knows* how to do a thing *right* nor *wrong*.

Feel of its abdomen. See how round and hard it is, how firmly the muscles have involuntarily grasped and hold the abdominal contents in their proper places, lifting them up towards the lungs!

When it inspires, see how hard the abdomen swells, the diaphragm presses down the organs, putting the muscles on the stretch, and these again, partly by involuntary, and partly by the voluntary contraction, through the nerves of motion, react, and throw back these organs against the lungs, pressing out the air.

But when the child cries, we find, by placing the hand upon its abdomen, that all the muscles contract and become rigid, acting violently in the production of the incessant and passionate cries.

Was it ever known that a well child, which had never attended school, became hoarse by hallooing or crying? Besides, at this age, there is something peculiarly musical in their voice.

Thus we see that by necessity, physiological inference, analogy and comparison, reason and facts, we have shown, beyond a doubt, that expiratory and vocal power lies on the

abdominal walls, and that when we thus use them, we meet the intention of the divine Architect.

But it may be urged in opposition to this view, that few act, or breathe, or speak in this manner, and yet they all live, and all breathe and speak; and also, that it would be remarkable, to say the least, if the majority should depart from the natural and designed course. In reply, we would remark, first, that our own experience in the business and events of life assures us, that it is not everything that is done which is *well* done, or even *half* done, or done to answer the purpose of our being. The fact of there being a proper way to do anything does not prove that there is no improper way. Custom, habit and ignorance more often set their seal upon and sanction the latter than the former. So it is here: for, is it not obvious that few people breathe with long and full inspirations, and also that there are few but are complaining, of affections of the breast, at an early period of life? As to the latter objection, that all would not thus have offended against evident natural laws, we have only to say, that "all have gone out of the way," and that there is "none that doeth good, no, not one," in a physical as well as moral sense. The truth is, that ease and indolence, with bad habits, and faulty physical education, do naturally bring the whole world into corresponding bondage.

But to test the truth of the vocal qualities of the abdominal muscles, let any one stand erect, elevate the mouth and explode or pronounce fully and clearly the vowels; let him do this without any effort of the throat or chest, but concentrating his will upon the abdominal muscles, cause them suddenly to contract, as does the swine, dog or horse, he will find that his voice will be clear, loud and smooth, and made with little effort. Although the throat be sore, it will not be irritated in the least, but even gradually recover under the most protracted and violent speaking, *conducted in this manner*. But let him lean forward, relax the abdominal muscles, and compress the chest and then speak loudly, without the contraction of the muscles, and his voice will be harsh and husky, or feeble and very unpleasant to the ear. Besides, he will feel a rasping sensation in the throat, and a concussion in the breast. But we must now leave this point, to resume it again in our remarks upon the philosophy of the voice.

We have now completed our description of the bare walls and contents of the whole trunk in gross, showing both their individual place, and collective bearings.

This mechanical arrangement constitutes the normal or natural and only truthful relation which is calculated to produce and perpetuate healthy phenomena. In the succeeding remarks, we shall suppose the binding link (or the abdominal

muscles), to be relaxed, and producing a long train of mal-relations.

We shall now take a *morbid* view of the trunk, apply it to consequent diseases, inquiring what would be the necessary result of this change of the mechanical parts, in the light of philosophical principles.

CHAPTER VI.

ABNORMAL OR UNNATURAL RELATIONS—THE MORBID INFLUENCE ON THE URINARY BLADDER—MORBID EFFECT ON THE RECTUM OR LARGE BOWEL—MORBID EFFECTS ON THE UTERUS AND ITS APPENDAGES—THE LIVER—THE STOMACH.

Abnormal or Unnatural Relations.—Let us now suppose the abdominal muscles to be relaxed, as in figures four and six, ceasing to contend with the law of gravitation. What may we rationally expect to be the effect?

Before we proceed to answer this inquiry, it will be expedient again to state that this morbid view will be conducted upon exactly the same principles as was the natural or healthy one, viz., it will be presented in the light of *common sense*, without any reference to anything abstruse or mysterious. Let the reader then closely examine our positions as they shall be presented in order, assured if these are correct, that the inferences which naturally follow must be correct and practical, however they may seem to conflict with pre-conceived opinions or long established prejudices.

The great question now is, are the views as laid down in the introductory in accordance with common sense, and are the structures and combinations of the human trunk correctly stated in the preceding pages? If so, then we have firm ground to stand upon in our future progress, and every assurance that the conclusions to which we may be led will be correct. With these prefatory remarks, and keeping distinctly before the mind the orbit or relation of each and all the organs, in the normal state, as before described, we proceed directly to our task.

Let us suppose that from some cause, the abdominal muscles have become weak and relaxed, and cease efficiently to resist the perpetual gravitation of the abdominal organs: or, in other words, that instead of acting like elastic strips of *India-rubber*, when put on the stretch—perpetually striving to get back to their original dimensions—they act like wet *fiddle-strings* or cat-

gut, yielding to every distending power. What will be the local effect upon the snug and well packed organs within, that have until now mutually supported each other? Our opinion is, that in this case, the bowels will still crowd upon the muscles, particularly at the lower belly, enlarging it, and causing a distension of its walls. Following up the effects, upon the same mechanical grounds, we next see that the intestinal mass will no longer be compact, and in a round, snug form, as in figures three and five, but will be separated and elongated, as in figures four and six. Of course, they will drag after them the stomach, liver, and spleen, or to say the least, will cease to support them as formerly. Let us ascend still farther, and carefully mark the extended train of morbid relations.

Remembering that the diaphragm is unable to *support* the organs beneath it, and indeed that it was not *designed* to perform this office, we can see how the ligaments that sustain the stomach, liver and spleen, being put upon the stretch by the specific gravity of these organs, must tend to invert and lower the diaphragm from its natural and high position, as before explained. Bearing in mind also, that the diaphragm was always to press upon even the *collapsed* lungs, and to sustain the heart to a great degree, what will be the consequence of this descent of the diaphragm? We answer, a space is left between the lungs and the diaphragm, and only a *point* of the heart, instead of its whole lower surface, rests upon the latter.

But descending again, let us see how the pelvis and lower organs are affected. We see that these lower organs have now to act as a *pack-horse* for those above, and, in addition to their own weight, they have a superincumbent one to carry, producing the following mechanical influences upon each of the organs, viz.:—The urinary bladder must be compressed or turned back, the *womb* depressed or also turned back, and the large bowel mechanically obstructed. The nerves that pass from the back to the hips and limbs, supplying the power of sense and motion, will be either drawn out of place, compressed, or, to say the least, the surrounding organs will hold a new relation to them. Furthermore, the veins passing up the limbs as well as those of the bowel will be unnaturally compressed, and the lining membrane of the abdomen will be upon the stomach.

Again, we see that in figure five, the apparent object of our Creator was, to throw the abdominal organs back as near the axis of the body as might be; but now they have fallen forward and downward, out of the axis of the body, at a much greater distance from the spine, increasing the leverage of gravitation against the spine, or base of the body.

These are a few of the mechanical effects of a morbid relaxation of the muscles, an effect that even the eye might discern,

and that might happen to an inanimate combination of the same kind, influenced by a mechanical displacement.

But as man's mechanical arrangement is only a machine whereby may be exhibited an animate, noble and vital set of phenomena, we may now ask what will be the *functional* effect upon each and all of these organs, by such a disarrangement? What would sound reason and a careful judgment expect?

Some say, that such is the mobility of the human tissue, and the accomodating powers of nature, and so trifling is the derangement, that no sensible functional influence can or will result from it.

In reply we would observe, that if even a nominal derangement be admitted, no matter how much or how little, it is sufficient for our purpose, and all we now ask. It should be borne in mind, that our systems are not only mechanical and perfect, but that they are endowed with vitality and great sensitiveness or susceptibility also, and that the vital susceptibility is only able to operate, when the mechanical combination which it moves, in a functional point of view, is in its exact and primitive state. Of course, then, the most *trifling* disturbance would be felt by the sentient part of man. This law is perfectly apparent in all the cognizable functions of every organ.

For instance, take the finger; it has a given dimension, and a natural function to perform; but suspend even an *inconsiderable* weight from it for 24 or 28 hours, and it will give manifestations of new and diseased action. It will undergo more or less pain, and some degree of extension; not so much because of the violence applied to it, but because it is subjected to a new action and new relation. And the finger too, although its natural function is to lift great weights, yet, if kept too long extended, with only an ounce ball, will lose its elasticity or power to bend itself, and will be absolutely elongated to some extent; trifling, then, as has been the weight, and slight as was the extension, yet it has nearly interrupted its functions.

The truth is, that words are nothing in themselves, but require the power of circumstances to give them determinate signification. For instance, upon a long road, a mile may be said to be a short distance; or, in comparison of two routes, men may say there is but *little* difference, that is a *few* miles. But when we come to discuss the difference in the length of *noses*, or the merits of a watch, the meaning of terms has very much changed. We say of one man, that his nose is very *long*, when it may not differ a *half*, or even a *quarter* of *an inch* from another's; and in the watch we say that a wheel is much too large or small, when the whole may be put in a nut shell. So that the smaller the object, the more necessary is perfect and exact adaptation; and the terms large and small may be often inverted with perfect propriety.

Thus, in the case before us, we have an actual displacement among small, complicated and *sentient* parts, that have a corresponding complicated set of functions to perform. May we not, then, with perfect propriety, expect some functional derangement as the result?

Having devoted so much space to the settlement of this *important* point—*much* and *little*—we now proceed to view in order, the scattered and oppressed mass, commencing with the pelvic organs

What will be the functional effect of this displacement upon the urinary organs, *rectum* and *womb*? It will be recollected, that they are now carrying unnatural weight, and are, of course, oppressed.

The Morbid Influence on the Urinary Bladder.—This organ, in the healthy subject, floats in the abdomen, to accommodate itself in extension, as in Fig. 5; but in Fig. 6, we see that it is turned back, compressed in size, and of course diminished in capacity and power to retain the urine a proper length of time. In this case there will exist an incontinence of that fluid, and a frequent desire to void it.

Or, in another case, it may bend the body of this organ back or forward, producing both a compression and angle in the neck of it, and thus mechanically obstruct the exit of the fluid, inducing a terrible and often fatal disaster. But this does not go to show that there are *no other* causes for this malady, requiring appropriate *internal* treatment; but when the above is the case, we ask, how many *pumpkin seeds*, how much *Harlem oil*, or *spirits of nitre*, will it require to relieve the suppression, or in incontinence, how much *tinct. lyttea*, *balsam copaiva*, *bitters*, etc., etc., will it require to remedy the matter. It is plain to see, that the whole of this treatment would be of no avail.

Shall we inquire what will? We know that the reader will say that the organ itself is not sick, and needs no medicine. Let but the oppressive and superincumbent weight be removed, and all will be well—the patient saved from the annoying use of the catheter, and the disgust of taking a host of nostrums.

Let no man, then, in these difficulties, ever think of internal dosing, until he has first examined into the patient's form and habits. See if the abdomen is not pendulous at the base, while it is relaxed and retracted in its upper regions, or, in other words, let him be sure that there is not a natural and mechanical cause for the origin and perpetuity of the complaint. I have seen many cases, both of incontinence and retention of the urine, which have resisted all other treatment, and yet have yielded to the simplest mechanical remedies, acting upon the above principles. I now ask the confirmed hypochondriac and dyspeptic, if he is not troubled more or less

with retention of the urine, and if he does not find that his abdomen is different in form from what it formerly was, if it is not retracted at the pit of the stomach, and sunken and hard at the lower belly. Many such cases have been relieved of troublesome urinary incontinence, by some power applied to hold the bowels from the organ, and change the shape of the abdomen. In *retention* also, after all ordinary treatment has failed, the patient has been relieved by following the direction of an *old lady*, viz., to turn the sufferer *on his face*.

Morbid Effect on the Rectum or Large Bowel.—We see that in lieu of the elevated state of the small bowels, there is now a partial descent of them, and that they rest with peculiar force on that prominence of the back-bone where it juts forward, and where the bowel dips down into the pelvic or lower cavity. Now, in our view, it does not require any stretch of reasoning to conclude, that this will finally produce a mechanical obstruction, in this bowel, to the regular descent of the faeces. What will be the natural consequence of this? Of course there must occur an accumulation of alvine matter, and the frequency of the regular discharges be diminished. This mass will become hard and heating, absorbing the natural secretions of the bowel; like a foreign substance, irritating the inner membrane and nerves, and inviting an undue quantity of blood to it. This will, indeed, be a gradual, but certain result.

Added to this mechanical view, there is another consideration that operates in the production of obstinate cases of costiveness. We see in the healthy child, or adult, that the abdominal muscles are like India rubber, or an elliptic spring; so that when we step or fall, the contents of the abdomen descend upon them, and distend them; these instantly react, throwing themselves and the superincumbent bowels back to their former position.

This any one can test by placing his hand on the lower belly, and stepping heavily. He will sensibly feel the vibration or reaction of which we speak. Two purposes are subserved by this arrangement. First, it tends to preserve the organs from injurious contact and bruising, and thus they have always a gentle movement. The second result obtained by this motion and pressure, is, one of the most constant and necessary stimulants to functional action. This action stimulates the bowels to motion and to secretion. But now, how different is their condition, the bowels fall and rest upon the lower belly, and upon the bones below. Here they lie so low, that they are below the axis of muscular contraction, while if there does occur a retraction or contraction at the *upper* belly, press downward, and do more harm than good. The bowels themselves thus lie inactive and unacted upon, perfectly inert and deserted by their usual facilities for action; to all intents *dead* or motion-

less. This combination of influences may well produce permanent costiveness without any reference to the vital energy. But let us follow the effects of such a derangement still further. It will cause the whole intestinal tube to be preternaturally distended, producing derangement of the stomach, bad breath, loss of appetite, &c., &c. It will also mechanically retard or obstruct the circulation of the blood, inducing stupor, sleepiness, ennui, and a host of other symptoms.

But this state cannot long exist; this hard, foreign mass *must* be thrown off, and the system rouses itself up to do it. See the disadvantages under which it labors. The bowel is now very tender and dry, and so is also the mass dry; but by united energies, by the exercise of great force and straining, the mass is thrown off; but what is the effect? The inner membrane is much larger than the outer, and lies in folds; but this dry mass pushes these folds before it, and turns it out at the outlet. Then the sphincter muscle that closes the aperture, contracts around it, constricting it, obstructing the circulation, and forming hard and very sore tumors upon the parts. Eventually these stools will be followed by blood, and you have as genuine a case of piles as can be imagined. Now, reader, we ask, are you not forced to admit these conclusions? If so, what treatment should these symptoms receive? How many cathartics, Brandreth's pills, Phinney's pills, Hygeian pills, and syrups; how many *homœopathic* or *allopathic* doses will it require to remove the cause and relieve the effects? Never can internal remedies do efficient good; as well might medicine, poured into the coffin of a dead man, be expected to resuscitate him. The truth is, it is a mechanical difficulty, and requires mechanical relief, and all other treatment must be worse than useless. We leave the proper treatment of such a case for another part of the work.

Morbid Effects on the Uterus and its Appendages.—We find, also, that there is a radical change in the mechanical relation of this organ and its connections.

Instead of having little more to do than to sustain their own weight, they have now a great weight to carry, the organs above them, to a great extent, falling upon them. The inevitable result is, that the womb must either bear up the mass, or be greatly depressed, thus frustrating all its original relations. Let us trace out the consequences a little, further and see if we cannot find a clue to a large class of diseases that now torment the female, and which have hitherto been considered incurable. It will be recollected that we said, that the uterus had five supports; viz., the vagina below; the cellular tissue, intervening between it and the surrounding parts; the round and broad ligaments—the former arising from the side of the womb, running upwards and outwards through the abdomen, and then passing down under the skin, and inserted in the groins, not

unlike a pulley ; the latter, arising from the top of the womb, and running upward, for the most part, are dispersed over the loins, or small of the back. We have seen, also, that the peritoneum, which lines the belly, is thrown over a large portion of the womb, and firmly attached to it. These organs, when in their proper and natural position, are put upon all the stretch that is healthy and comfortable. *Now let us mark the effect of this unnatural position.* The womb is depressed ; of course, every support is put upon an unnatural stretch. The vagina, a passage from the external world to the womb, would be forced open if it were not previously relaxed, and the womb depressed into it ; the cellular tissue is also put upon the stretch.

Now what will be the symptoms produced by such a state of things ? Will there not be a sensation of *weight*, bearing *down*, and *dragging* in the lower part of the body, often accompanied with a burning pain throughout, or in the region of the womb ? The womb also, in its descent, rests on the bones, or the soft parts below, producing pain there, and a sense of *bearing down*, which is aggravated by standing, walking or taking *any exercise*, forcing the patient to move with great care, to avoid being in the least jostled.

Also, the mouth or neck of the uterus rests upon some substance, which should not be, as it was designed to be suspended in space. This brings about a very hardened, irritable state of that organ, it becoming enlarged and painful, which often terminates very seriously. This has often been supposed to be a cancer of that organ ; but we have seldom failed to find all affections of the uterus that were confined to its neck, cured by elevating the womb, and removing the great cause of irritation. But again, this descent of the womb puts the *round ligaments* upon the stretch, and, of course, the result will be, that its effect will be experienced where the ligaments are fastened, viz., in the groins ; hence the patient, in addition to the other sensations, will feel a *dragging*, *drawing* and *pulling* sensation in the groins, which, after exercise, is often almost intolerable, and makes the patient's very countenance look discouraged. The *broad ligaments* are also put upon the stretch, and as these organs spread over and fasten upon the small of the back, we look for some effects ; and here, indeed, we find them in all their painful intensity, viz, the dragging, grinding, worrying pains in the small of the back, so common to the afflicted female. This pain is often so tormenting, that language is not adequate to express it ; the most common description given to me by the patients I have visited is, "I feel as though *a joint or two of the back were gone.*" Now is it not plain that all the symptoms above described are rationally accounted for upon mechanical grounds, without resorting to the ambiguous and uncertain terms, *sympathy*, or *irritation*, or *general*

debility, all of which terms give no clue to practice, and tend only to induce the taking of a long string of internal remedies, which can be of no manner of profit. Such will be the mechanical effects, and such the symptoms; but what will be the effect upon the functions? So far as my experience goes, it will be as follows:—

First, the nerves of organic life are oppressed and irritated, and we may expect either a cessation or profusion of the menses; generally the latter, and very often terminating in hemorrhage from that organ, gradually wearing away the life of the patient.

I have several cases in my eye while I am writing, one in particular, Mrs. P., who labored under all the symptoms before mentioned. The falling of the womb was excessive; so much so that it pressed down the pinneum, and caused a tumor unpleasant to sit upon.

This lady rarely went two weeks without the most severe hemorrhage, and one week was her ordinary respite. This lady had taken medicine enough to either *cure or kill* anything, without the least beneficial effect; but upon using a mechanical appliance, which relieved the depressed uterus, both the frequency and excess of these discharges were cured to a great degree.

But there is another set of difficulties which we proceed to detail, of which a large portion of the female community are by no means ignorant.

The nerves that pass down the limbs, and supply them with the power of sensibility and motion, are derived from the back. They pass off from each side of the spine, and run through the pelvis by different apertures. It is well known that these organs are exceedingly irritable, and tenacious of their rights. But this new and morbid relation of all the parts, either drags the nerves out of place, compresses them, or, at least, throws them into some new state of association. In our view, they are *actively compressed*, and *dragged upon*, thus obstructing the medium of sense and motion.

Hence are explained the following symptoms, which occur in the case of those who are afflicted with all, or a part, of the above described ills, viz., a burning, grinding, dragging pain in the limbs, particularly in the inside of the thighs, and often extending downward to the feet, producing a sense of great weakness and pain on motion, with numbness and pricking sensations.

Often these symptoms are accompanied with the swelling of limbs, and entire loss of motion. Such patients will feel comfortably well in the morning, but towards night they find the above complaints coming on with withering power, accompanied with a distressing sensation of weakness in the hips, and

pain or cramp there on motion; or, as they have expressed it to me, "a feeling as though the hips would come apart," especially when going up hill, or a flight of stairs. These patients may be, in other respects, in tolerable health, and yet be of all beings, most miserable.

We now ask the reader if we have not reasoned fairly, or if any one can doubt the justness of our conclusions? If we are right, what course of treatment should be pursued in such an exigency? Should constitutional, or internal, or should mechanical remedies be applied—remedies that will replace all the organs in their one only healthful relation? And have we not also described the present situation and sufferings of a large portion of the heads of families, and many others?

Again, let us inquire into the effect of this change upon the *vagina*. This organ, in health, is designed to act much like an *India rubber* tube, always contracted upon itself, so that its inner surfaces meet, and also to admit of considerable distension. But what do we now see? Instead of the healthy state, we see this organ perpetually distended, and filled with the body of the *uterus*.

This body acts like a foreign substance in this organ, and irritates its powers of life, causing the vessels to pour out a fluid, often in very great abundance, which is a kind of mock suppuration, as in the case of the maturing of a wound. Furthermore, the longer this distension continues, the more will its fibres give way and become relaxed, making less and less effort to contract to their former state. And just in proportion as it is distended, just so far must the pores or ducts that open into the inner surface be mechanically enlarged and relaxed, admitting of too ready an exit of the secretions. Thus we see that although the falling of the womb might be the *first cause*, the *effects* themselves now become active *causes*, perpetuating the disease. This morbid state is called *leucorrhæa*, or whites, and we have yet to see the *first case* of this exceedingly disagreeable and weakening complaint that will not give way to a judicious application of mechanical support, in conjunction with other remedies.

The recital of numerous cases and cures will be deferred to the practical part of this work.

Another effect of this relaxation and displacement is, that the veins of both the bowels and the limbs are preternaturally compressed, laying a tangible and powerful embargo on the ascent of the venous blood, producing, of course, an enlargement of the veins of the bowels, inducing tumors or piles, in conjunction with constipation. This will result also in an increase of blood in the veins of the legs, instituting, or at least aggravating, *varicose veins*, or a predisposition to it.

Another effect is, that the lymphatic vessels, which convey

transparent fluids to the trunk from the limbs, are *also* compressed, inducing an interception of the lymphatic circulation, bringing about an enlargement of these vessels, and a swelling, at first in the feet and afterwards in the limbs, alarming the patient through fear of dropsy. But observe one thing in this case, viz., that this class of patients will feel better in the morning; the swelling will be diminished, and they will be able to walk comfortably; but soon the swelling, stiffness and pain return again.

What think you is the meaning of these changes?

At night the horizontal position has removed the weight from the vessels, and the fluid is permitted to pass along its way. It returns again the next day, because the compression is again brought on and the obstruction produced. This clearly shows that internal remedies should not be administered for *supposed* dropsy, until we are assured that it *is* the dropsy, and not the certain effect of mechanical displacement, and relievable by physical and rational means.

Let us now re-ascend into the abdomen, and look into the natural effect of this relaxation upon all the organs. We have already spoken of the pain and weakness in the limbs; the dragging in the groins and in the back, and the sensation of weight and bearing down in the region of the womb;—these in the female case should be borne in mind, while we detail other symptoms above the pelvis.

Effect on the Bowels.—The bowels are now supposed to lie inactive upon the womb and the pubis or front bone, so that any jostling produces a painful sensation, and the abdomen feels full and hard at this very point. The patient will always complain of a sense of deadness and weight at the lower belly. Again, the lining membrane of the abdomen is now put upon the stretch, at the bottom of the belly.

This membrane is exceedingly irritable, vascular, and poorly calculated to sustain much impingement with impunity. The consequence then will be, that this state will irritate the nerves of organic life, invite an undue quantity of blood to this tissue, inducing a slow irritation or sub-acute inflammation, manifested by that soreness and tenderness so common in most cases of *dyspepsy*, *hypochondria*, and the other diseases mentioned before.

We now see the whole original mass mutually impinging instead of mutually supporting; the lower bowels fall, dragging along with them the upper; and these, if they do not drag the *stomach*, *liver* and *spleen*, in their fall, at least leave them to the influence of *their own* specific gravity. This weight we know to be considerable, and if they descend, as they undoubtedly must, their suspensory cords must be put upon the stretch, and communicate a sense of weight to the *stomach* and sides

Look then for a moment to such a relation of these parts, and mark the effects.

There is now a space (nominal at least) between the bowels and the large organs, and this is unnatural. Formerly the latter were continually supported by the former. These upper organs now being unsupported, there will ensue a sensation of dragging and pulling felt in the heart, sides and stomach, to avoid which the patient leans forward as in Fig. 4. See now how small is the waist, and how the pit of the stomach turns in and sinks! See how flat and soft the abdomen is at the stomach, and how round and hard at its base! As in Fig. 4, he keeps his hand at the pit of the stomach where he feels a *goneness*, a sinking, a vacancy. He inclines to be crooked: keeps hollow-backed rocking-chairs; is disinclined to stand erect, because he says it "*pulls*"—"it is tight;" but when he bends forward, then the upper organs descend and find their old neighbors, and the patient, in this *humped* position, enjoys a kind of *comfortable misery*.

What are the facts in the case? The stomach is suspended by its two ends without support, and when the patient eats, he is often compelled to retire immediately to bed, because he has, he says, such a load or weight at the stomach, which is partially relieved by the prostrate posture. But the healthy subject, where the muscles are firm, feels supported and better after eating, because all the parts are more firmly sustained. This fully explains the *goneness*, *sinking*, *weight* and *load*, so much and so often complained of. Again, in the *female* particularly, when they complain of the foregoing symptoms (as Dr. Dewees truly says), there is, almost always, a pain in the left side, in the vicinity of the spleen, and Dr. Dewees also frankly acknowledges that he cannot account for it, only he knows the fact. To us the reason appears evident. From the lower surface of the spleen, and upper also, on account of the visceral descent, there is a hanging, or suspension; producing pain of a hanging, dragging, dull and dead character, which is almost perpetual, and which is most generally not increased by pressing—a sure sign that there is no interior, inflammatory action.

Again, how commonly are liver affections indicated by pain in the right side. But do we not see that the liver being a heavy organ, when not supported, will make large demands upon the ligaments that connect it with the diaphragm to sustain it. This is a very unnatural work for these ligaments to perform, and certainly they must partially, at least, invert the diaphragm, and produce just such sensations as we may now describe, viz., a sense of weakness in the right side, accompanied with pain generally of a dead and dull cast; the patient will have a sense of dragging and hanging, and generallylear

towards that side ; incline to sit or stand with the hands upon that region.

Now is there any mystery in this ? Is it not *all* the natural result of natural causes ? And yet, most of all such patients will be treated constitutionally for an idiopathic functional defect of the liver, and *that* by remedies which are too potent to be poured into the system needlessly, and which have no direct action upon the disease.

But one thing should be remembered, viz., that this mechanical derangement may exist so long, or go so far, as to induce new symptoms of an inflammatory nature, thus producing a compound state of disease, requiring both mechanical and constitutional remedies. But even in this case the mechanical must be chiefly depended upon for a radical benefit. It is very common for patients to call upon me, representing themselves as having an affection of the liver or spleen, and dyspepsia, with many other things. When I ask them what they have done, they generally reply that they have done almost everything, and employed the best physicians.

As a general rule, they say that they have been scarified or leeched in the side or region of the pain, and that this has been followed by *blistering*, then *moxa* or *tartar emetic ointment*; that they have taken the whole catalogue of *syrups*, a mass of *blue-pill*, and in a word, used the whole routine of remedies which are right and proper for primary affections of these organs. But observe, when I ask them how these applications affected them, they almost invariably reply that while they took the medicine, and kept up the sore, they felt better of the inward pain ; but when the sores healed, then the old difficulties returned again. So we see, the truth of these cases was, that there was no primary affection of the organs, but a mechanical one, inducing some vital or functional derangements, requiring only to be mechanically replaced, and all would be well.

The good effect produced temporarily by the application was this. When they were scarred, and blistered, and made perpetually sore on the outside, they felt better within, and when the outer difficulties became better, then they were again made sensible of their original difficulty. By this time, I conclude that it is best to examine the case for myself, in my own way. I look at the patient as at a building, liable to become shattered or racked. I keep in view that he should be erect ; that then his chest will be well developed, his breast and stomach full, and his abdomen firm, and not too large at its base ; this erect position pressing all the organs upward, supporting the upper portion of the abdomen as much as the lower. But what do I generally see ?—exactly the reverse. The patient is humped up ; badly formed ; breasts flat ; stomach retracted and sunken ; the abdomen flat and soft ; the waist

small, and the lower belly large (comparatively) and hard. I ask you now, if I need to doubt as to the *geographical* state of the inner organs? Have I not every evidence that the lower organs must have fallen away, and left the liver, stomach and spleen unsupported, and that the patient must feel all those mechanical and functional derangements that necessarily result from such a state? I ordinarily place the patient before me, and examine the feeling and form of the body, describing at the same time his sensations so accurately that he is often greatly surprised. I then inquire whether the sore parts are tender to the touch; what kind of a pain is felt; whether it be a sharp, severe and shooting pain? The answer is generally in the negative. I then ask if it is a dull or dead pain. "Why, y—e—s," is the answer. One, a lady of Philadelphia, was very expressive in her answer, when urged very hard to describe this pain. At loss for any word sufficiently descriptive, as a last resort said she, "*It feels just as though it was hanging from where it is hatched.*" That just told the story. It was a pulling, dead dragging pain. This is applicable to either the liver, stomach or spleen, or all in combination. When I place my hand upon the small of the patient's back, pressing it, and then place the other hand at the lower belly, and raise it upward and backward, then involuntarily the patient straightens up, and is relieved. Now suppose that I should sit down beside the patient, and gravely taking hold of the wrist, feel carefully of the pulse; then look at the tongue; examine the skin; inquire after the appetite, into the state of the bowels, and ask a hundred other such questions, how near should I come to the nature of the case and the proper treatment?

I should only find a multitude of diseases to contend with, and primary diseases too; I should then be forced to deal out a formidable catalogue of internal remedies for each species. For my part, in the investigation of such a case, I should as soon feel of the elbow as the pulse, and look at the weather-vane as at the tongue, for a guide. This is the way such cases are kept along *uncured* and *incurable*—both the disease and the treatment being misjudged. In another part of this work we intend to cite a large number of cases that have come under our notice, as illustrating the above positions, and exhibiting the happy results of a successful treatment.

But these remarks have been chiefly confined to the *feelings* of the patient, and not much has been said of the functional derangements of the organs, as the direct result of the mal-position. We now proceed to speak of the *functional* influence of relaxation, in visceral malposition.

The Liver.—It will be recollected, that to be mutually pressed above and below, is the proper state for all the organs: and also that the stimulus of pressure is one of the commonest and

greatest stimulants to functional action, known in the human body. So we see that the liver is perpetually pressed upon in all parts by the ribs, lungs and bowels. The function of this organ is to receive the blood which has been sent to the different organs in the abdomen, and is upon its way back again to the heart. And when it has thus received the blood, it draws out or secretes from it an element called *bile*, which, if left in the blood, renders it poisonous and deleterious to the system, giving a yellow tinge to the skin, and also to the white of the eyes. This morbid state of the system is called *jaundice*.

This organ may become torpid or inactive, and insensible to the presence of the blood, its fibres neglecting to operate upon it, and jaundice will be the consequence of the blood's being loaded with bile. Or again, the nerves of organic life in the liver, which preside over this function, may become irritated instead of being torpid, and secrete a vitiated and unhealthy bile, which irritates and inflames the coats of the ducts that convey the bile into the bowels. Again, as there is no muscular tissue about the liver or gall bladder, of course it must be by the surrounding pressure that this bile is thrown into the first bowel, to assist in digestion. But in a morbid state of the system this pressure is removed, and there becomes an accumulation of bile in the gall bladder, as the bile is not poured out. The specific effects of such a state, and the consequent indigestion will soon follow. Or, on the other hand, the reverse of this may happen. The bile may be somewhat vitiated, and after the gall bladder is filled to a certain extent, it may continually flow into the bowel at improper times, keeping up an irritation and perpetual *diarrhaea*, or chronic *dysentery*. This last effect explains the green stools often seen in bilious diarrhoea and dysentery. The liver is either torpid or irritable: generally torpor comes first, then reaction in the form of diarrhoea, or dysentery. This we observe in costiveness, for it is often succeeded by an excessive discharge.

The Stomach.—There is an analogous action in this organ. It is used to the comfortable support and stimulus of pressure. But in the present state of the trunk it has it not. The nerves that preside over the functions of this organ are sensible of a change; that the surrounding circumstances are new, and they are soon thrown off from their balance.

Let us illustrate what we mean by this effect upon the nerves of organic life, disturbing their action. If a gentleman have a study, all in order, and is very systematical and uniform in his business, it becomes a second nature to him; but if some innocent and darling child do but transpose some of his papers, he is frustrated, made peevish and irritable, and manifests it by a hurried movement and fretful speech. Now, if the noble and rational powers of man can be affected in this way, and by so

slight causes, how much more may that *involuntary* and material part of him be affected by a similar action, when it has no judgment to guide or direct.

The fact is, in this case, that the surrounding circumstances are changed, and the nerves will feel it, and generally act accordingly. It is very generally known, that the digesting power of the stomach lies in a certain fluid contained in it, called the gastric juice, or rennet, as in the stomach of some animals. This fluid is under the power or direction of the nerves of organic life, and, when healthy, will dispose of whatever is put into the stomach. Now the nerves may become torpid or dormant, and cease to manufacture (or superintend it), the gastric fluid. The consequence is, that the stomach becomes dry, and that food forced into the stomach lies there, as if in any other *bag*, undigested. It soon ferments, producing belching (eructations), offensive breath, and disagreeable taste in the mouth; or directly *this* result may ensue, viz.:—the nerves may be irritated or oppressed, and secrete a peevish, morbid, heating fluid, which irritates the extremities of the sympathetic nerves as soon as it flows over them. The consequence is, that there will ensue a burning pain in the stomach.

In the torpid state, the patient will eat anything, and complain of nothing but a weight, or distress in the stomach; but in the irritable state, anything put into it often is immediately rejected as a foreign body, and the patient may be on the point of starvation.

The same ambiguous results are true in the morbid state of the spleen; but we leave this part of the subject, to carry out our inferences. In view of what has been shown, may we not at times refer the whole train of dyspeptic symptoms to the relaxation of the abdominal muscles, and a change in the mechanical relations? If this be so, can these symptoms in such cases be effectually removed by medicine without corresponding mechanical treatment? Yet let it be borne in mind that the symptoms *may* occur from other causes, requiring an appropriate constitutional treatment. But, what we mean is, that when these symptoms obtain, if we find the form of body above described, showing that the organs are not duly sustained, we should first try all proper physical means, before we plunge into the mists of experiment on the vital action. It may be, that the disease exists from a combination of causes, and requires a combination of internal and external treatment.

We have in this state of the system the diaphragm continually dragged upon, and permanently inverted, to a certain extent, by or in consequence of abdominal muscular relaxation. We leave the visceral investigation for the present, and proceed to speak of spinal affections.

CHAPTER VII.

MECHANICAL INFLUENCES OF RELAXATION AND ACTION ON THE CHEST—THE LUNGS—PHILOSOPHY OF THE PULMONARY CIRCULATION AS CONNECTED WITH THE FUNCTION OF RESPIRATION—EFFECTS OF LACING—MORBID INFLUENCE ON THE VOICE—THE FUNDAMENTAL LAWS OF MOTION.

Mechanical Influences of Relaxation and Action on the Chest.—First, we shall discourse of the heart. It will be recollect ed that we have shown in figures 2, 5 and 7, that the organs below were to support the organs above, and that it was to be accomplished by the abdominal muscles. But now, how different is the relation in figures 4, 6 and 8. The form of the abdomen is changed and sunken; the diaphragm is dragged upon, and drawn below its natural place; of course taking away a great support from the heart, so that now instead of being supported, it is, comparatively speaking, suspended. Now what may we expect in a functional point of view from this change? We answer first, that this state is certainly a very unnatural one, and that the nerves of organic life, that preside over the involuntary action of the heart, will be oppressed, excited and irritated. This will cause both an accelerated and an irregular action; which will vary in intensity, and will cause all the varieties of *palpitation*, or as some term it, fluttering of the heart. It has not been uncommon for ladies to ask me if the heart could ever fall or sink, and I have placed my hand on the left side of such patients, and absolutely found the beat much lower than I expected; but I dare not then intimate that I thought the heart, an organ of so much importance, capable of a change in location. But now I understand it; these patients were all of them drooping and relaxed, just as we have described, and the heart had absolutely sunk. Even Elihu seems to have made reference to this when he says, “At this also my heart trembleth and is moved out of its place.” When Elihu said this, he was broken down in body by fasting and continual watching. Think you that his abdominal muscles were not greatly relaxed, his heart sunken and in great agitation? Fig. 8 represents the diaphragm as descended, and only the point of the heart resting on it, which is a pretty good representation of the state of those laboring under the symptoms previously described. In this case, the fastenings or moorings of the heart are put upon the stretch. As this is a very unnatural state, it seems highly probable that there would be a deranged vital action in that

organ. We know that the reception of a long expected letter makes the heart leap for joy; but if it be sealed with black, it causes the heart to sicken, and almost cease to beat. Or if one's rights are invaded, and we are insulted, it rises in giant force, and beats with hasty and firm strokes, that send the blood to the very surface of the body, and makes the tired muscle ache for exercise. If then such comparatively trifling external circumstances, which have no material connection with the heart, can, through the mind, so effectually modify its action, how much more may internal circumstances of a mechanical character, and bearing directly on the heart, be expected to superinduce very important modifications in its original and peaceful action? This point is so clear that we may safely pass on to speak of the operations and effects of palpitation of the heart.

When palpitation of the heart is once originated, no matter by what means caused, there are a multitude of effects or results that we may naturally expect therefrom. The first effect which we shall notice is one confined to, or felt in the heart itself. In most cases, there is a more frequent and strengthened action of the heart, and in all cases, its fibres are laboring under agitation, and a disposition to act, which is unusual.

Let us now see what will be the natural result of this on the heart's future action. The first inference which strikes us is, that it will tend to an unnatural and diseased enlargement of the heart, and that this enlargement will prove, in its turn, a reacting and perpetuating cause of itself, on the following principles. We see, in the cases of the farmer, the blacksmith, and the dancer, that the limbs most-used by these different characters, are very large and strong. This is brought about simply by the effect of exercise, which through all animate nature seems to be the natural stimulus to growth and strength. So with the heart; its fibres, by their increased action, accumulate power, and consequently growth, while the growth and power will in their turn enhance again the action. Now as we pass along, let us not forget that the offending cause is far back, even as far as the relaxation of the abdominal muscles.

Another set of affections which will or may be the direct result of the palpitation of the heart, have reference to the functions of the lungs; for the irregular and unnatural action of the heart may have induced a derangement of valves that admit the passage of the blood from one room of the heart to another. For instance; the arteries send the blood to the lungs from the right side of the heart, and the pulmonary veins carry it back to the left side, from whence it is sent over the whole system. Now if the valve that defends the passage of the blood from the first to the second room in the left side of the heart does not act, or becomes bony or gristly, of course

the blood will be obstructed in its course from the lungs through the heart, and on, through the system. What will be the result of this mechanical derangement? We answer, that the blood will accumulate in the pulmonary veins, and of course, be gorged in the lungs, inflaming them, expanding them, and producing a sense of suffocation in them. The countenance of the patient will become blue, the lips livid, and the face flushed. The lungs will be fevered and irritated. In order to free themselves, they will secrete a thick, tough mucus; there will be a troublesome cough from the irritation, inducing the patient to conclude that the lungs are the primary seat of the disease. We may infer from the foregoing remarks this simple but important inference, viz., that the apparent seat of complaining is not the real seat, or even the locality of the disease. Let us also learn that we should never attack diseases of the lungs with internal treatment, by potent drugs, before we ascertain whether they are symptomatic, and a mere *effect* of a remote mechanical defect, calling for mechanical and physical treatment. We are only glancing at these effects as we go along, and now pass to the more remote effects of the heart's palpitation. We have seen that the heart is the great engine for the circulation of the blood. Its vessels divide into those which run into the head and arms, and those which supply the lower trunk and extremities. We see that the distance to the head is shorter than to the feet, and more direct. Of course, then, when the action of the heart is increased, the blood must be sent to the brain in unusual quantities, and with increased impetus. When we recollect that the brain at all times so completely fills the cavity of the skull that the very courses of the blood-vessels are imprinted deeply upon it, we can but expect that this surcharge of blood must be attended with some material consequences. Seeing that the cranium is formed of bone, and is inelastic, what will be the effect, we ask, of ejecting in this forcible manner the blood into the delicate organs that already fill the cavity that contains them? We answer: the nerves of seeing, hearing, tasting, smelling and feeling must be compressed, and there must ensue a sense of fulness and tightness in the head, giving rise to that beating which is felt in fever; headache on laying down in nervous people; also accounting for the relief produced from a straining sensation in the head, by the application of a napkin around it.

But for the other morbid manifestations. We may see the soft brain, its fibres compressed in every direction. Of course the optic nerve will be in some degree compressed, and as this is the great nerve of vision, its action being mechanically intercepted, there will be a practical interruption of its functions. The nerve affording the ear a medium by which to convey sounds to the brain will be compressed or collapsed, probably

both in alternation, and either of these states will of course produce an interruption of the functions of this nerve, producing either a loss of sound or strange sounds. The same may be said of the nerves of smell and taste. We shall now attempt to sum the whole matter up, and try to give a rational explanation of certain things in this connection which have been hitherto in the dark, and susceptible of only vague probabilities.

While we proceed to the detail, let it be remembered that the subject will be affected, permanently or transiently, with palpitation of the heart, and more or less of the train of symptoms described as the result of *abdominal relaxation*.

Now we know that such a patient will often suddenly, after reaching or stooping, carrying a weight or ascending a hill or flight of stairs, complain of dizziness, blindness or confused vision, unnatural and frightful objects; will reel and stagger, holding upon the nearest object for support. The patient often imagines this to be a fit; complains of a sensation as of water in the head; of ringing in the ears, with a confusion of ideas and loss of memory; clasps her head with her hands, and remains in a fixed attitude. When the fit has passed over, sometimes she will say that she felt at first a sensation of creeping up the spine, the sensation entering the brain and spreading out in every direction. Sometimes this affection passes off quietly, the patient moving gently and looking around; at other times it is immediately succeeded by bursts of tears and sobs, the patient not being able to cease or assign any reason for this conduct. At other times they will scream, seem delirious, and talk incoherently. Such patients will be often telling that life is a burden; that they have no comfort; they will be ever looking for death, and yet when it seems to be approaching, will be filled with terror. Much may be learned from the above connection of causes and consequences. First, we may learn the probable cause of nervous troubles, viz., a general or local muscular relaxation, and not an affection of the truncal organs. In the second place, we learn that these diseases do not exist in the imagination or fancy, and do not depend upon a strong or weak mind; neither are they under the control of the most powerful intellectual influences.

Those who have followed us in our mechanical investigations, will see that one might as well talk tactics to the wind, as to expect that the mind can curb or govern nervous affections brought about by mechanical causes. In this view of the subject what shall we say to those husbands or *creatures*, who, when their faithful and afflicted wives are laboring under the above symptoms, not only refuse to afford them necessary attention, but even aggravate their sufferings by neglect, or cold and unfeeling remarks—turning them off with such cruel expressions as these—“O! you are only hysterical! you will

get better by and by"—and bestowing upon them a look that speaks louder than words, expressive of contempt or derision, thus increasing a thousand fold the unutterable agony of the sufferer. At this time she particularly needs the supporting arm, the kind look, the sympathizing voice, and the magnanimous attentions of him upon whom she leans as the bulwark of her defence, her prop and her stay against the blasts of life and the howlings of adversity. In her turn, when her rock, her stay is smitten, she, like a vine, twines around him, at once supporting him, and at the same time comforting and healing. Remember kindly these tender ones, or ye are unworthy of such a jewel, and deserve rather to taste and drink the dregs of life with no soft voice to cheer, nor soft hand to press the throbbing brow.

Our remarks upon the treatment of these affections will be deferred to the succeeding chapters.

There is also a ruinous class of diseases peculiar to the male sex, which is nearly allied to those above described in the female. I refer to melancholia or hypochondria. These patients we never find sitting or standing erect, with a full chest, and prominent and high shoulders. Their stomachs are always retracted and sunken, their upper belly soft and tender, while the lower is sunken and hard, as in figures 4 and 6. They complain generally of pain in the right side, and a sense of weight in the stomach, accompanied with tension or stricture, and aggravated by the erect posture. They walk with their heads down, the shoulders drooped, the chest compressed, and the hand laid flat on the lower belly to sustain themselves, and preserve the organs in their place, and from injury while in motion. The countenance and eye express despair or despondency.

It has been the writer's happiness to attend several of these (of all perhaps the most unfortunate), and he has never failed to witness a smile of satisfaction overspreading the face on being well supported upon the broad, pendent abdomen, and upon the small of the back by the hands. They immediately straighten up, breathe freely, and are astonished at themselves. It is our opinion that the majority of the cases of hypochondriacal and hysterical predisposition are both caused by, and accompanied with, this general malposition of the organs within, thus mechanically disarranging the nervous functions, and inducing a whole host of nervous complaints.

Let me remark, that this view of the subject should teach us to exercise patience and pity towards those who are thus afflicted, and not wound them by cold or trifling jests and gibes; for we see that this mental aberration is only an effect, and not a cause—only an oppression, not a deficiency or alienation of the mind. We may also learn from the above remarks the

secret of suicide. We have been surprised and alarmed at the confessions of hypochondriacs: they almost universally tell us that they have a constant and irresistible desire or propensity to destroy themselves. They are restrained, they say, by a consciousness of their responsibility and consequent criminality in the act, thus showing the mind to be in a *sane*, but *depressed* state. It is done, not because the man dares to *die*, but because he dares not *live* in this, to him, frowning world. I have many cases in my mind which have been radically relieved by supporting the abdomen, and relieving the trunk; some of these have been inmates of an insane retreat. These cases will be detailed in the chapter on the *treatment* of diseases.

The Lungs.—We now proceed to inquire into the effects of a relaxation of the abdominal muscles on the lungs and their functions. In this part of the investigation, we will be very cautious, and keep our eye closely on the mark, reasoning candidly, but taking tangible substance as the subject, and tangible principles as the media of our reasonings, proceeding carefully, step by step, until we arrive at the conclusion to which such a process of legitimate reasoning may lead.

It is agreed that the natural relation of all the abdominal organs to the lungs is, to support them by preserving the diaphragm well elevated against them, both in expiration and inspiration. Thus the *mediastinum*, or *strithin*, which passes down the centre of the chest, remains in a quiescent state, and is not put upon the stretch.

But in a morbid state of the trunk, what do we find? The whole abdominal mass has descended, and ceased to render its usual support to the *diaphragm*. Of course this latter organ is, to a certain degree, permanently depressed. In this situation, it no longer, at any time, is in its firm and proper contact with the lungs; and there is a permanent morbid relation existing between them. In this depressed condition, the fibres of the diaphragm will not be put upon their stretch at any time by the elevating power of the viscera; consequently, these fibres will have lost their usual stimulus to contraction, so that an imperfect respiration must be the *necessary* result. The diaphragm having receded from the lungs, there will exist a partial vacuum between them.

This state of things will cause a depression at the stomach, and smallness of the waist, as the surrounding atmosphere will press in the ribs, and elongate the chest, for it is contrary to the animal laws to allow a real vacuum in the human trunk.

Thus we see that the diaphragm will neither be thoroughly elevated nor depressed in inspiration or expiration; of course its influence is thus, to a great degree, lost in respiration. Now what are the mechanical inferences to be drawn from

the state of matters? We deem them to be these: That the body will droop forward in consequence of the loss of the supporting influence of the abdominal contents. The weight of the trunk will crush in the short ribs, towards the centre of the body, and prevent their expansion outward; this will produce a permanent compression of the chest, at the point which should be its most expanded and expansible part. This will also destroy the power of the intercostal muscles of the short ribs, so that the latter cannot be duly elevated by these muscles, to say nothing of the separation of their front extremities. This of course leaves inspiration to be effected chiefly by the superior intercostal muscles in the elevation of the superior ribs, and the expansion of the chest at that region. Hence we see why, in all cases of retracted stomach and contracted waist, the sides do not expand, nor the abdomen in inspiration; but they breathe often and short, and *that*, by a heaving of the upper portion of the chest, with the lobes located there. This is seen in its extremes, in the case of one suffering with consumption, or troubled with shortness of breath, the respiration all being effected by the intercostal muscles. Here we see the philosophy and mechanism of respiration most effectually interfered with, entailing on the subject all the dreadful sensations, and constitutional and local effects, which must follow from imperfect respiration; these we will consider hereafter.

We showed that the mediastinum (or the partition between the right and left lungs), which is attached to the upper surface of the diaphragm, is not intended to sustain it; but now the dia phragm is drawn down, and *it* is put upon the stretch—a very unnatural situation indeed. Hence all who habitually lean forward, complain of a sense of pulling in the centre of the chest when erect; also of tightness or stricture there, inclining them to walk or sit in a bending or drooped posture, so as to allow the diaphragm to descend enough to rest firmly upon the organs below, and relax this tense membrane above. Such persons feel quite a *comfortable misery* when all the old neighbors again meet each other, although in a very deranged state of the organs. This position must permanently compress the lower lungs, necessarily depriving them of the proper expansion and contraction, throwing a great burden upon the upper lungs, producing local and constitutional effects, which we proceed to describe.

We first ask, is it not now evident that the organs of the chest, as well as the abdomen and pelvis, are under the influence of the abdominal muscles, and are not the latter dependent upon a healthy relation, for the quiet and faithful performance of their specific functions? We will attend for a while to certain physiological points, and to certain general principles of philosophy, and then describe the diseases of the organ

and the effects of the above described morbid mechanical relations. We shall hope, by so doing, to induce the reader to embrace the doctrine we hold, that at times the most alarming pectoral diseases are caused by a bad mechanical relation, and that they are, in such cases, *curable* by a restoration of the due relations, and the cultivation of the material functions.

We take it for granted that the reader is now perfectly satisfied that the philosophy and mechanism of respiration are interrupted, so that this is carried on mostly by some agency, evidently not intended in the original design.

Philosophy of the Pulmonary Circulation as connected with the function of Respiration.—The ventricle (a strong muscular cavity in the left side of the heart) sends the blood, through the medium of arteries, to all parts of the system, for its nourishment and warmth. In its course, it passes through all the different organs of the body, all of which have different specific functions to perform in the human economy. The liver, for instance, secretes bile from the blood; the kidneys urine: the glands of the mouth saliva; and so all in their lot, like greedy beggars, receive their portion, and all take different compositions.

This is done while the blood is passing the capillaries, or the invisible vessels which constitute the connection between the arteries and the veins. This separation of different qualities from the blood by the different organs, is effected by the different powers which each organ has, through the medium of what are called the nerves of organic life, or the *insensible sensibility of BICHAT*. The blood, when it leaves the heart and enters these organs, is of a red or claret color, very warm, and loaded with elements for the sustenance of the whole body. But in its journey through the different parts of the body, the oxygen—the reddening and warming ingredient, together with the nutrious particles, are stolen away, leaving the temperature of the blood low, and its qualities impoverished. Furthermore, it has received a poisonous and chilling principle from the system, called carbon, which blackens it, and renders it unfit and inadequate to nourish and sustain the body. Hence the reason why the blood in the arteries is red and warm, while the blood in the veins is black and less warm. We see the necessity of the purification and re-enrichment of the blood to perpetuate the human phenomena.

With this end in view, it now travels back to the heart through the veins, to receive amends for its losses.

It reaches the right side of the heart—the opposite from which it left—and it is from thence sent to the lungs through the pulmonary arteries, for a fresh supply of oxygen, this being the reddening and stimulating material, which it receives through the medium of inspiration. In this last mentioned act,

the cells are filled with air; the blood coming almost in contact with it, sucks out its oxygen, and, in exchange, releases its collected carbon, so that the lack is now entirely met, and the breach in the blood healed. The blood is now sent onward into veins in the lungs, to be carried back to the left side of the heart, from whence it first started again to be distributed to all parts of the system, as before, and for the same purpose. This impoverishment and enrichment of the blood is going on simultaneously, in the well-balanced system. What is the process and design of the pulmonary circulation and respiration we now see, and the way is opened for us to look into the laws that preside over and govern these functions. This knowledge is important, in order to know how to maintain these functions, and how to restore them when they languish, and also that we may see with unclouded eyes, what will necessarily be the result of a breach of these functions.

In the first place, we see that these vital and very essential functions are under the influence and control of the philosophical and mechanical powers, and that these powers must be permanently related to these organs, in order to secure the accomplishment of the desired object. We shall proceed now to examine carefully these tender and delicate organs, and we expect to show that even the *finest* functions are the result of the peculiar and proper relation of the parts in their fibres and in their gross; thus making it manifest, that if the healthy functions depend upon a combination of natural relations, the unhealthy functions must of course depend upon an unhealthy set of relations, requiring physical treatment to cure them, and not medicine. We are now considering the process of the blood's purification, in connection with respiration, in which discussion the following points are to be noticed, viz.: *The entrance of the blood into and passage out of the lungs, its exposure to the atmosphere, and the chemical changes thereby effected; the abundant entrance of the air into the cells for the final accomplishment of the object.*

All of these particulars we shall now proceed to notice in a general and not particular manner.

When we look at a piece of fine, dry sponge, in the sun, we see a small substance, quite compact, looking rather porous, but observe no tubes or holes passing through it. If we immerse this sponge in water, we shall observe that it enlarges, and that it is now full of tubes passing through it, some of them admitting a quill. Now how has this happened? for surely these holes have not been *made* since its immersion, and the sponge returns to its former state when dry. It is evident that the insinuation of the water has separated the fibres of the sponge, and enlarged the whole mass. It will be seen also, that the walls of the invisible pores are passively and

mechanically drawn apart, increasing the diameter of the tubes very materially. The general expansion has accomplished this in the most natural manner, and the contraction of the sponge effects the contraction of the tubes in the same natural manner. The doctrine taught by this is, that the expansion of a porous body enlarges the dimensions of the tubes, and gives them a corresponding receiving and conducting ability ; and also, that this ability is only a passive condition, and not an inherent quality of the tubes. Now for the application. We see at the birth of the still-born or the living child, that the lungs are small, comparatively heavy, and compact. Should we look into them, we should see some pores, but no large cells or tubes of much dimensions, and no circulation in them, save that which is designed to nourish them, and this is very inconsiderable indeed. In this respect, they are very much like the dry sponge, the ribs being in close contact with them, through the pressure of the surrounding atmosphere. Previous to this, the infant's blood has been purified by its mother ; but now that it is separated from its mother, removed into independent life, it must purify its own blood or die. This is done by the blood being sent to the lungs, and through its tubes brought in contact with the external air. But what have we now ? Why, the dry sponge ; its tubes closed, the whole substance contracted, and of course the walls of the arteries collapsed, and allowing of no passage through them. They cannot be expanded by the power of the heart, because, by the influence of the atmospheric pressure, the diaphragm and ribs are continually pressed in upon the lungs, resisting thus the heart's contraction. Thus we are shut up at the very outset, and the important process cannot even begin, for want of capacity in the arteries. The defect, we see, is a physical one, and not vital, and there must be a physical change before any advancement is made. Or in other words, it is evident that an expansion of the lungs must first take place, before an entrance of the blood into the lungs can be secured. Inspiration then must be accomplished, with all its necessary attendants, to open the arteries for the admission of the blood. This shows us clearly that inspiration is the first act of independent life, and this failing, everything else fails to follow. How this is effected, we notice again cursorily, as we have before explained it in a former part of the treatise.

When the child is born, if it be strong, it must breathe, and accordingly the Creator commands the machine to *Play !* and immediately the intercostal muscles shorten themselves, thus drawing up the ribs, enlarging the chest ; the diaphragm also shortens its fibres, drawing itself down, flattening its surface, increasing the perpendicular dimensions of the chest. At the instant that this vacuum is commenced, the atmosphere rushes

into the lungs (in a passive manner, so far as the lungs are concerned), and fills up the cells, expanding them, so that they compress the diaphragm and ribs as much as when collapsed. This is inspiration ; and what has been effected by it ? The expansion of the lungs and the arteries, together with the required supply of air. Now we see the *wet sponge* and the tubes in it : an unobstructed entrance is now afforded for the blood, and an open passage through the lungs ; the cells are also spread out wide, like a table of refreshments—exposing a large surface—so that the blood flows directly up to the air, and is purified ; while the capillary vessels are also enlarged to their utmost, facilitating the passage of the blood through into the more capacious veins.

But now the blood being purified, it is necessary that it should pass along back to the heart for distribution, and make way for a succeeding quantity of impure blood, to undergo the same process, and so on in one ceaseless round. Therefore we must now provide for the mechanical expulsion or exit of the blood, as well as for its mechanical entrance. While the blood has become pure, the air within the lungs has been made impure ; of this the lungs must be rid, and a succession of fresh air secured. To accomplish this, the intercostal muscles now relax again, relieving the ribs, and they sink back again to their normal position, thus gently compressing the lungs. The abdominal muscles contract and compress the abdominal organs, elevating them, and of course elevating the diaphragm, compressing the lungs and expelling the air. By this means we see that the whole substance of the lung is compressed, the cells, the arteries and veins contracted. Of course the blood in the veins is pressed back into the heart, and this is the very end, the accomplishment of which was desired.

Thus we see that inspiration, among the many things it effects, also effects the circulation of the blood (in conjunction with the heart) in the lungs ; and expiration, while it would seem to be instituted for some other primary purpose, by the compression of the lungs, effects the return of blood to the heart, assisted by the suction of the latter organ, after its cavity is emptied. What a display of creative wisdom and power is this ! what economy ! what exactness ! After taking an extended and comprehensive view of all these relations and their connected results, we ask, What is to be learned from them ? We answer, first, that whatever interferes with respiration, strikes at every other function, and just in proportion as this is intercepted, the whole system is injured.

In the second place, we learn that the expiration will be imperfect in the same ratio that inspiration is.

Thirdly, we learn that whatever cause, whether permanent or casual, accidental or intentional, tends to diminish the cali-

bre of the chest, especially at its most capacious and distensible part, destroys the influence of the intercostal muscles, *must* compress the lungs and their vessels, thus preventing a fresh supply of air, and depriving the lungs of their natural *exercise*, which is their stimulus to functional action.

In a word, we see that the erect posture, the elastic abdomen, the broad, full chest, a plump stomach, and the regular rise and fall of the lower ribs, are the grand preservatives of life and physical comfort. This will appear even more evident upon examining these organs and their functions in a morbid state. We now suppose that the abdominal muscles are relaxed, the diaphragm inverted, the mediastinum made tense, the body drooped, the lower chest contracted and kept so by the weight of the body, destroying the influence of the intercostal muscles, so that inspiration will only be carried on by the upper lungs and intercostal muscles, interrupting or obstructing both respiration and the pulmonary circulation. What will be the sensations experienced and the symptoms manifested in this state of things? The blood, we answer, will flow imperfectly and slowly in the lungs, and, being in a poisonous condition, will heat and irritate the delicate tissue, create a sense of swelling and tightness, a smothered heat, and shortness of breath. There will be but little air in the lungs; of course then the lungs will be poorly expanded, and there will be but a small surface of air cells to be presented to the blood for its purification by the atmosphere. In this state the minute capillary vessels will be morbidly small, increasing the difficulty of circulation through them into the veins, occasioning a damming up, or engorgement in the lungs. This will induce intolerable tightness of breath, and a sense of fullness, as if breathing through a sieve or cloth. This stricture will especially be felt in the centre of the breast, and as there will be but a partial compression of the lungs, for want of a full expiration, the blood will linger in the veins, and move tardily back to the heart, ill prepared to subserve the wants of the system. It will be observable that the expansion will be near the throat, and that the breathing will be increased in frequency, to make up for imperfection in its length or quantity; for the system will have about the same quantity of air or gradually sink away. There will also be a sense of sinking and pulling at the stomach, which will be aggravated upon taking the erect posture, from the dragging of the sunken organs below, which will be relieved by placing the hand at the lower belly, and lifting firmly upward.

In this state the lungs would soon suffer, but nature is *true*, although we are *not*, and to relieve herself, secretes a mucous or ropy spittle, which is thrown off by a cough. It is this cough, after all, that keeps us alive for years under these

morbid relations. Again, this compressed state of the lungs on the one hand, and congestion on the other, tend to the rupture of the delicate vessels, and induce bleeding from the lungs.

This compression will, in the end, produce a total loss of expansion, and a collapse of the lower lobes of the lungs, so that the cool and reviving air is almost a stranger to them. The result is, that the cells secrete a glutinous fluid, which fills them up; their walls finally adhere to each other, and soon become torpid and hard. New vessels begin to shoot out in consequence of the pent up blood in them, and we have now another substance than lung—a hard, heavy, indurated mass. Inflammation sooner or later ensues and we have matter, or tubercles, which indicate that life is threatened by the *king of terrors*.

By this time, my reader perhaps has become alarmed for himself, or his friend, and is determined to change his habits and practices. If so, then I have gained one important object of my little work. But I have not done.

In view of the fact that it is requisite to engage all the combined influences above described, to secure an ample volume of lung, and an ample size and play to the chest at its inferior region, what shall we say of the trade of the shoemaker, tailor, and milliner? Although they are useful and honorable employments, their effects upon those of a slender and delicate make must be fatal. And this is confirmed by the sufferings of eight out of ten of those who labor in these trades. We ask the same question in reference to the confinement of the drawing-room and piano, and of the stooping, mincing forms which our fashionable schools teach the finest and the most lovely part of creation.

Effects of Lacing.—But in view of the *dreadful* effects of the above morbid physical state, when it occurs unavoidably, by accident, or seeming necessity, what can we say of her, who, as if sporting with destruction, draws around her, with all her concentrated strength, the suicidal cords? And this is done most often without the least excuse, for it is the slender and delicate child, in the main, who delights in playing at this *hole of the asp*. Indeed, we are at a loss to account for the practice, apart from an injurious effect upon the health, seeing that it is so contrary to the *Grecian* taste. Their statnes of goddesses, and descriptions of the fairest and most noble female forms, associate beauty, strength, and a waist commensurate with the size of the wide hips and broad shoulders. At least, we should think that the love of ease, liberty and life, would prevent so many from rushing on to years of unutterable wo, or early death. Dear young lady, do you know what you are doing? If you do not, let an experienced practitioner tell

you. You are laboring hard to pile up fuel, to which fire is soon to be set, and which will burn up all your comforts, hopes and joys. I have not spoken of a still more solemn consideration; the sin against the God of nature, who in perfect and matchless wisdom first gave the human form its allotted and majestic shape. I conclude by saying to my own sex, in the language of another, “There is no hope of reformation, till the dear, folly-smitten girls learn that to distort the form by lacing is alike *criminal, dishonorable, and in bad taste;*” and this opinion our sex may confirm and sustain.

But you will doubtless acknowledge all I say to be true, but deny the charge on yourself. Well, I never knew one who did lace too tight—no, never! All deny it, and I cannot believe they *all* mean to speak untruly; but still, the *truth is, you do lace tight*, and are deceived, and I am sorry to have cause to say, that, as a general rule, your mothers are to blame for it, much in the way that a father is to blame for the ruin of a son by drunkenness, who has fed him with spirits disguised in sling or juleps, &c. For instance, she becomes early anxious for your *respectful* and advantageous entrance into society, and to have every obstacle removed which may lie in the way of your success and pleasure. *Foolish* woman, for supposing that to effect this, you must follow in the wake of others’ folly and destruction. She wants to have your *form respectable*, and to effect it, she makes for you a *loose* but snug jacket, and, if you do not draw it too tight it will feel quite comfortable; but soon you are insensible to its pressure, and it must be a *little tighter*, to produce the same amount of comfortable support which it did at first for the muscles of the waist, and the ribs and lungs have quietly submitted and yielded to the surrounding pressure, until it has become a second nature to their sensibilities (but not to their functions). And so, on it goes by degrees, the pressure increasing by degrees as the size diminishes, and the sensibilities become benumbed. Hence you think not that you lace tight, though meantime one would dread to have his finger retained beneath your corset-strings many hours at a time. The question is not, how much pressure can you *endure*, but how much can be practised without the following consequences—viz., without increasing the natural labor of the muscles in elevating the ribs in inspiration, diminishing the size of the waist, and compressing the lungs, producing the necessary effects of such a state? Or in other words, these organs of sense are not organs of function, and must be considered with reference to the latter.

This view leads us to see, that the first ounce of pressure on the ribs is an encroachment on the pulmonary apparatus, whereby extra efforts are required to make amends for its influence.

Noble, generous youth, whose bosom glows with manly, gallant fire, and who aspires to be protector and possessor of one who has stolen your admiration, if she be one of those above alluded to, although every other virtue entwine around her, and every grace flows over her, let me invite you to sit down with me, and fully consider the enchantress of your soul, coolly and philosophically, and I will tell you what shall happen to you in days to come ; I will make it plain to you. Turn not away, for I must tell you, since you are about to buy so rich, valuable and costly a property, that there are *cheats* in such as well as in other things. Since man cannot live on virtue, wit, or beauty alone, look for some valuable *physical* qualities with at least as much care as you would in the selection of a much less valuable horse, or other animal property, because without them the finer and nobler graces cannot luxuriate to advantage. I will now help you, and we will candidly work it out together.

She has drooping shoulders and a contracted chest, and THAT at its base ; she seems to breathe wholly at the top, and not at the base of the chest. There seem to be sundry tacklings around her which confine her, and restrict her proper movements. The abdomen is thereby contracted at its superior and *should be* largest region, and the abdominal muscles are forbid to expand and collapse liberally. Let us also now, in imagination, look inward, and see what are the relations existing there.

We see that the chest is the smallest at its *should be* largest part, and the lungs pressed as it were "between two stones," within their bony and relentless case. Thus the lungs are crowded upward unnaturally, and of course the communication between the chest and abdomen very materially diminished, so that in some cases a very large apple could scarcely pass through the skeleton chest into the abdomen ; also that the stomach and liver, whose natural and proper places are, to be in perfect apposition with the elevated diaphragm, and so maintained, by the elasticity of the abdominal muscles, are now pinched and crowded downward by the approximating walls of the waist. We also see that by this set of relations the bowels are crowded downward, and made to press on to the organs below, to wit, the urinary bladder, lower bowel and womb. That the bowels rest like a dead weight on the bones below, and thus much enlarge the abdomen in that region, increasing the hardness and compactness of the mass, and producing all the train of evils spoken of in the former part of the work. And as you are looking forward to the *conjugal* state as the one which is to complete your mutual happiness, let me now be a little prophetic.

It is natural and *right* to hope for offspring, but suppose

your hopes are crowned with *prospect*, let me point to some of the items which may and will make you trouble, and have made many backs and hearts break. The trying hour approaches, but observe what changes of form and relation must take place, of which all know; but how unlike the former form and relations! The growing *fatus* demands room; it travels upward for it, but what does it meet? A rack of bones obstructing its free progress, made powerful to do so by age and artificial compression. They separate tardily and imperfectly, consequently there is over distension at the lower abdomen, with great pressure, and a crowding and distending at the unyielding waist which is distressing, whereby is produced an improper compression of the tender *fatus*. In short, in lieu of compression of the body, there is now uniform distension, and the extent and effect of the latter is aggravated by the unnatural amount and application of the former. The consequence of which will be, that the undue distension of the muscles will at least be great, and produce great discomfort. The nerves will thereby be more dragged and compressed; the abdominal organs will have less room and suffer consequently; the circulation in both the large and small vessels will be mechanically impeded and obstructed, producing engorgement and congestion, accompanied of course with pain, irritation and fever, with great restlessness; also, general disturbance of the brain, with confusion of mind and dizziness, and occasional hysteria and threatened fits. All these contingencies will tend to engender a *riot* among the susceptibilities of the body, aggravating the common troubles of gestation (or pregnancy). The next effect of this will be, that much medicine will be requisite, but more especially will she be compelled to resort to bleeding to avert threatening danger and relieve present troubles, and that too, when as to quantity there is no blood to spare, and I can attest, that by prodigality in this respect, much injury has been done. How often is it that long before the *proper period* for relief, the poor patient who has been the child of affluence, luxury and fashion, lingered out a living death, and felt that death would be only a sweet release from wearisome nights, an aching heart, and dreadful gloom of mind!

This state, which is the result of the force of circumstances, is often fatal to the cherished hopes of the sufferer, and too often to her life also; for every one knows how liable such patients are to be *unfortunate* in their first and second journey, encountering all the dangers of abortion, both present and prospective, which are agreed on all hands to be worse and more hazardous by far than the process of *natural labor*.

But we will suppose that the *proper* period has arrived. when all the natural and artificial efforts are to be made, and

in which the patient is to feel that the will of Heaven is to be consummated concerning her, whether for life or death—prosperity in the full realization of her highest hopes, or disappointment in the loss or death of the child she has carried so long. At this hour, how does she look upon all the world to be nothing, its fashions, its arbitrary customs, and the *respectable* form, and so on! How she feels that she would exchange them all for a safe passport through this strait, or even for a *mitigation* of some of her pangs; and if she has been informed of her former impropriety and its tendency, how will she reproach herself and her mother; how will she pray for forgiveness and an aversion of the consequences of her folly! Poor child, may Heaven grant her prayer, and may the more *abundant* mercy be shed upon her, and above all, may she be truly penitent, and by her life and influence show that she is restored to reason, duty and a sense of moral obligation, in these respects!

As one who knows and has been a friend and as a father to many, let me describe this crisis, and tell what is the probable prospect. Shrink not nor be offended by this paragraph, for one who loves his race and sympathizes with the afflicted, will not withhold that knowledge for the lack of which many die, because false taste is offended.

The birth, if natural, is effected by the combined influence of the womb and abdominal muscles,—i. e., by their contraction. But these muscles have been habitually coimpresed, shut in, and forbid that liberty of motion which they should enjoy; consequently their great design in this matter is intercepted. They are now thin, torpid, feeble and unused to action. The *womb*, also, has been compressed during pregnancy; besides, there is a sympathy between the muscular fibres of both it and the abdomen. The great influence of this state of things will be, that now they are called on to act in concert with a regular, steady, firm force, they will not do it, they don't know how, besides, they lack the *power* to do it; therefore, their efforts will be false, lingering, wrangling and inefficient, protracted and wearying, acute and *full of pain* to tease the patient, but not of effect. The time will be a tedious one, the friends will be anxious, and the patient discouraged and worn out.

The terminations to these efforts are quite various, and it is a great matter of gratitude to Heaven, that they so often terminate favorably, though at great cost. But too often they terminate by death to the offspring, through delay and compression of the brain, or the interference of art, in consequence of labor, and the powers of nature leaving the patient, calling for *manual* assistance, perhaps by mutilation; more commonly, however, both mother and child are saved, “*as by fire.*” Yet

I am compelled to state, that it is not uncommon for the patient to actually sink in the struggle, even at the moment of delivery, being worn down by pain, morbid efforts and manipulations; or else to linger a few hours or days in child-bed, under fever, inflammation, or disorganization, and then —die, leaving *you*, young man, *alone*; thus closing up the drama, and furnishing an epitome of the history of *folly* and fashion, *alias*, a **RESPECTABLE** form.

This is your *chance*, at least, if not your prospect; and, sir, let me tell you, that the records of child-bed misfortunes tell with warning accents, that three cases out of four of bad labor, and death of either or both the child and mother, have been the inheritance of the unfortunate, silly, pretty girl, whose form has been made *respectable* by artificial means; for Providence seems to make a decided difference between those of *native* small size and those of an *artificial* one. Often the smallest patient does well, because every part is faithful and full of vigor, where the larger one, who has confined the ribs and compressed the muscles, has done badly. The fault is in the *action* of the soft parts, and not *so much* in the *form* of the hard, as a general rule.

I have addressed *you*, young man, on this subject, because more could not be said to her; and “though one should rise from the dead, *she* will not believe.” The great misfortune is, that the fatal end does not come when the seed is sown, or blow struck. But the execution is only *deferred*, and *will come*, and not tarry; it is like the egg of an insect, deposited in the root of a plant, which will grow and be nourished by the root itself, till it becomes a worm or serpent that will eat out the vitals. Yes, ‘tis but the perfect fulfilment of a wise adage, viz., that “excesses in youth are like drafts upon old age, payable at sight, and nothing in the vaults.”

Learn, then, to be wise, as you love yourself and your country. In the selection of a companion, choose such an one as will enable you to say with Solomon, “He that hath found a wife hath found a good thing, and hath obtained favor of the Lord.” Be guided by judgment and discretion, as well as by *love*, for the latter cannot be enjoyed or perpetuated without a body. And if young men thus act, they practically place their seal of disapprobation on such suicidal practices. Also remember, that we include in these remarks, though less criminally, those who *indulge* in a bad form, a curved body, drooped shoulders, retracted stomach, and other things that may be inferred from the foregoing remarks.

But, gentlemen, I cannot conclude my remarks on this point, without a short notice of a *lecture* addressed to *me*, to the following import, viz., on who are to *blame* for the present and former bad taste with reference to *form* and *dress*.

Said an *accomplished and intelligent lady* to me, who had heard my severest remarks on the practices and sentiments of her sex on the matter in point, “ Dr., I have liked your remarks on the iniquity and folly of our sex ; your remarks were not at all too severe ; I said *amen* to all, and plead *guilty also* : but I do not think, after all, that you do *justice*, or your duty.” She added, “ I need not deny that my anger is always aroused at the anathemas of men on this point, for I *do know* that though the guilt and practice is with us, the *fault* and *cause* is with *you*, and bitter experience has demonstrated the point to me, and I will convincee *you*. When young,” said she, “ I was of a remarkable ruddy appearance, and my form was just what it ought to be—round, plump and firm, with a waist above what is *fashionable* in size. My powers of endurance and strength were great, and the circumstances of my father called for their exercise. My sister was exactly of another form and appearance ; she was slender and delicate ; her waist was very small, and, owing to her delicacy and evident lack of *comparative* physical powers, she had the more education, and performed the less labor. But this disparity (which ought to be, and really was, in my favor), was turned to my very great disadvantage and deep chagrin. My mother was ashamed of me, and called me a great *hulk*, twitting me of it in company. My brothers nicknamed me *broad back* and *large foot*. My father heard it, and laughed at it. My mother compelled me to lace, almost to strangulation, to reduce my healthy and comfortable form to the size of *respectability*. She and the rest of my very *near and dear friends* made me *actually believe* that I was not fit for society, and I was truly miserable ; ‘ wounded in the house of my friends.’ When either ladies or gentlemen visited us, they would remark concerning me—‘ What a fine, lusty, healthful girl you have, or she is ;’ and of my sister they would say, in blandishing complacency and approbation—‘ What a fine figure ; what a beautiful girl your daughter is ;’ or, ‘ You have a *beautiful* daughter.’ My sister’s *respectable* form, in addition to my own *hideousness*, brought on her double admiration, and to me *cold, withering, consuming slight and neglect*, made doubly effective by my keen perceptions and consciousness of deficiency. The consequence was, that I was agitated, and that I tormented myself by every device to reduce myself to a *respectable* form ; and now my health is ruined by these efforts, practised to please a blind and deluded mother, and *simple* brothers, and to conciliate the *respect* of a world that is looking around on the *spider’s webs* for something to admire. Yes, my once *iron* constitution is gone—gone for ever.”

“ And again,” she said, “ your poets and prose writers, and all others, when they speak of beauty in description, speak of the *slender waist* that can be *spanned*, the *delicate feature*, and

other evidences of effeminacy, and omens of premature dilapidation. By this you see that *your sex* lay the corner-stone of our superstructure of folly and misery. You arbitrate to *us* the standards of taste, beauty and *respectability*, and tell us in a thousand ways that you admire all those physical appearances and qualities which you condemn, and for which we are *to be* condemned; and *we* are *weak* enough to strive after them to please you, or to be able to gain your applause and admiration. We own that we love to be sought and admired, and of course we must come up to your standard of what is admirable, in order to obtain it; and so long as you openly admire that which is not really admirable, women will go on to practise those things. Therefore it is plain (however much we deserve it), that you do great injustice to *us* when you speak only of *our weakness* in trying to please you, and to hold us up to ridicule for what *you* are to blame.

"Correct the fountain, and the stream will be pure. Get for *your sex* consistency, and a correct, tasteful eye and imagination, and the evil will be quickly remedied by its death, through neglect and want of culture, or soil to grow in."

I thought a moment, and felt cut to the soul; I felt *her* correctness to the very core; and *my* mistake, and that something new must be done in our tastes and imaginations, our practices and feelings, as a sex, before we could expect to effect what we profess to earnestly desire. Gentlemen, shall this curse, this blight, cast upon us, shall it progress at our instance? Will we admire that which is unreal, just as we admire a butterfly, that, "at best is but a caterpillar dressed?" If not, then let us (if we have any partiality to show on account of native physical endowments) rather lavish them on what is real, and founded in reason and utility; then custom will change its course, its destructive torrent will run upward, or, like the overflowing of the Nile, enrich and bless the world. Then, O then, as custom is so potent, so easily directed to good and philanthropic ends, let us seize the helm, and give a proper direction and force to it. Then will the world be redeemed, lives saved, and comforts perpetuated to generations yet unborn.

Nor let parents who are proud and vain fail to learn something from this view, and remember and practise it. I charge you, as you love your own selves and the bodies and comforts of your dear children, to do them no harm—make no distinction between them on the above ground, nor allow the world to; and, so far as points of physical beauty are concerned, let that attainment in it which is *real* be the matter of choice and culture.

Morbid Influences on the Voice.—We now proceed to detail, in the same mechanical style, the several morbid tendencies of

a relaxation of the abdominal and dorsal muscles, and of an improper attitude on the varied expiratory functions, as in breathing, talking, hallooing, and blowing upon wind instruments.

It should be recollect that we proved, in our physiological remarks on the abdominal and dorsal muscles, that expiration or voice was the result of the contraction of all the muscles on the abdominal organs, all of them being continually well pressed against each other, so that they always compress the lungs at each contraction, and mechanically express the air, thus producing philosophically, all the varied and sensible phenomena of expiration; and that these effects we call vocal, when modified by the action of the vocal muscles. But what have we got now, while in this relaxed condition and general change of location? Let us see. The muscles are relaxed, the abdominal organs have descended, the *diaphragm* is thereby inverted, and the chest depressed in the act of speaking. This shows a general and great contrast between the physiological and mechanical relations of the vocal apparatus in the present and former state.

We first proceed to examine some of the fundamental laws of motion, and their power. Secondly, to apply these principles to the vocal apparatus and its operations, showing thereby that there is a striking analogy between the construction and operations of both animate and inanimate musical instruments. Thirdly, to show, from thence, what must be the necessary tendency of the now supposed existing morbid relations on the voice and its vehicle.

1st, *Of the Fundamental Laws of Motion.*—The human trunk may, in most respects, be compared to a bellows, and is governed and moved on much the same principles. We see that the throat, or windpipe, answers to the passive metallic pipe, or *nose* of the bellows; that the chest answers to the great vault, or cheek of the bellows, having, like the bellows, no power to contract of itself and expel the air. We also see, that the abdominal muscles answer to the handles of this bellows, shutting or contracting this vault by their own contraction, compressing the furniture within, and forcing it against the lungs, mechanically expelling the air. We also see, that, like the bellows' handle, so are the abdominal muscles, or handles, situated at the most remote and largest part of the bellows or chest, to increase their force of leverage on the chest at its most movable part.

Keeping these principles of the trunk's arrangement in view, and the great reasonableness of these relations and operations, we will be prepared to prosecute the investigation.

We will now conceive of a tube, or groove, of a very delicate texture or tissue, and that it cannot bear roughness or

abrasion with impunity : also, that a ball, or body, is to be propelled from it, and that the following items are requisite for the due effecting of the object, and the preservation of the apparatus, viz. :—That we obtain great force by the application of *little* power ; that the body has a simple movement without vibration ; that it goes unobstructed to a given point. These three particulars secured, effect the one great object, viz., the due function, and the requisite impunity of the operative part.

First, In order to propel any body with great force, by the application of but little power, the propelling power must be applied so as to act in a perpendicular or direct line. This is a common principle in motion, and the reason is, that there is but one opposing force. In the case of the ball in the groove, as here supposed, if the power be applied directly in the rear, the tube undergoes but little concussion, and offers no real opposition, but simply *conducts* the ball. In this way we get the force, the simple movement, in a straight line, without prodigality of propelling power, a compound motion, or concussion of the tube. Thus far all works harmoniously. This effect, we see, is produced by the first principle of motion, i. e., the abdominal muscles below propel the body in a direct line. But should the power be applied obliquely, then more power will be requisite to move the body, because the opposing points of force tend to neutralize their agency ; also, the motion of the body will not be simple, but compound or vibratory, by reason of the friction on, and the concussion of, the tube by the oblique forces. By such a process several losses are sustained, viz., we incur a prodigality, a waste of expulsive power ; we lose the simple motion, and incur a vibratory one, and the groove of *tissue paper* is concussed and abraded, tending to produce an increase of its wear and tear. Again ; should the expelling force be applied neither directly nor even obliquely, but at right angles, what then ? It is evident, that in such case, all motion of the body would be lost, because the forces would be equal in power, and simultaneous in action, and their combined action would be neutralized : excepting the body were a fluid one, then the effect would be equal on all points. But what would be the effect on the groove, or tube, conveying the body, thus forcibly acted on from all points ? I answer, to produce universal concussion and distension, if the body be fluid or elastic, as the movement would have no given direction, the tendency would also be to rupture the tissue. We are now prepared to see, that except the power act in accordance with the just law of motion, all will be wrong, and tend to mar the machine, and obstruct the object of the process.

But further. Let us suppose that the power is applied right, and the body moves right, yet, that there is a curve in the tube

near its further extremity, or outlet. What then? Why, the body will move along its passage as it should, until it comes in contact with the curve, or angle, in the tube, or groove; then it of course will strike at the opposing point. Necessarily the motion will be checked, and a concussion of the whole body will ensue. This would increase the concussion on the tube, and enhance its improper wear. Besides this, the body must start off at the angle of incidence, and take a new course, frustrating one of our first objects, viz., to send the body to a given and determinate point. Now, however well the body started it matters not, since its course is changed, the movement will be a vibratory and random one. This brings us to see, that beside a correct application of power in the design here referred to, the tube must be straight also to its exit, or, if curved at all, it must be but gently and regularly so.

Furthermore, let us suppose that the operation of the power, and the direction of the tube, be right. But its outlet is contracted, and is not commensurate with the size of the groove, or the volume of the body that is to make its escape. For instance, suppose it to be a loaded cannon, or rifle, with a contracted muzzle; what will the effect be on the gun, and motion of the ball discharged? The answer is, that the onward force of the ball will be impeded, its motion rendered vibratory, and, also, that the cannon or rifle will be liable to burst, for the most obvious reasons. This makes it clear, that three things then are requisite, viz., a proper direction of power, a straight tube, and an ample outlet for the body being propelled. Now, if the gun or tube be crooked, and the muzzle contracted, there will exist a double cause for a wandering movement of the body, first by the obstruction at the angle, secondly by the concussion at the mouth of the barrel.

These common-place, and, doubtless, preconceived principles being agreed upon and considered, let us proceed to make the application. The windpipe, bronchial membrane, and air cells, constitute, emphatically, a tube of great sensibility and delicacy, bearing improper concussion and abrasion with but poor grace. The air in them is certainly a body, and a very elastic one, and is to be expelled from the lungs, with (at times) considerable force, by the application of but little power, in a manner that will produce the least effect on the delicate tube and membrane. Of course it must be done by a power acting in a direct line with the passage or course of the air, and by the windpipe being straight, that we may have the simple movement. The economy of power, and the proper direction of its application, are admirably executed in the arrangement of the abdominal muscles and organs with and on the lungs, lying and acting as they do, directly below the latter, so that when the abdominal muscles (or handles to this

living bellows) contract, they at once push against the air, through the diaphragm in a direct line, with little effort producing great effect.

This shows us, that the doctrine of the influence of the abdominal muscles in vocality lies at the foundation and commencement of vocal philosophy. The *second* law of vocal philosophy is exerted in man's erect posture and elevated head, whereby the vocal tube is straightened, or, if curved, is but gently so, like the true curve of the trumpet. This facilitates the steady and uninterrupted passage of air along the straight and smooth membrane.

The third law of motion as applied to vocality, i. e., a free exit of the body without a shock or concussion, is executed by a free use of the mouth in speaking, opening it wide, so as not to allow the teeth or lips in the least to intercept the peaceful passage of the air through them. But should the vocalist not abundantly take his teeth and lips out of the way, though every other department be well performed, the air will be broken in its course, and the whole of the philosophy of its motion be broken np. We will now just sum up, and throw together the action and effect of this combination of organs and principles, supposing that they all act in concert.

We now can imagine that all these parts are in their due positions, with the *lungs* well inflated with air. The abdominal muscles will first contract in a direct line with the course of the air tube, and, with a gentle force, expel the air with a smooth movement. The air tube is but gently curved, and the mouth is well opened, so that there is no impediment to a gentle, still movement of the air, from its starting point in the air cells, to its escape into the open vault of space. Then, if the vocal muscles of the throat and mouth play supplely and properly on the air as it is thus gently expressed, any variety of musical or other sounds may be made with the most perfect ease, by merely changing the shape and form of the air as it passes out of the chest and mouth.

We will now invert the whole order of the above beautiful design, and see what will be the operative result, viz.:—Let us suppose the body to be drooped or bent, whereby the chest is contracted and the abdomen expanded, i. e., the *lower* belly; its muscles relaxed, and the true support of the organs removed, leaving them pendent from the diaphragm ; the shoulders depressed, the chin also, and the air tube curved, of course. That the teeth are clenched or sparingly opened, and the lower jaw moved but little—the lips all the while acting very stiffly, Next, let us suppose that the performer begins to declaim or sing with vigor, under all the above morbid relations. What will be the several effects and operations on the organs, view ing the matter philosophically :

Let us see. In the first place he cannot use the abdominal muscles, for they are already relaxed and ineligible to effective contraction. Of course, then, he cannot apply the power philosophically through them, and therefore must do it through *compression of the chest*, obliquely and at right angles. This he does by sinking or drooping the shoulders, and contracting and depressing the chest. Here the power is applied at opposing points, and of course produces a general concussion of the air in the cells and bronchia, and agitation of it among the cells, tending to rupture them, as it is as much pressed downward as upward. By this we see that if there was located a vocal apparatus at the diaphragm, the person speaking in the above attitude and relations could give a double performance at once. The air rushes in every direction, and a portion of it escapes at the mouth, and on its passage goes oscillating and rasping up the throat in different and ragged currents, until it strikes the roof of the mouth, and is thereby again concussed and scattered, as this angle in the passage is acute. By this means, too much of the air will find the straightest and most ready exit through the nose. It next encounters an ivory fortification, by striking against the teeth, which are too much clenched or closed to admit of a ready exit of the air without a morbid movement, for we see that in the case of the cannon or rifle, they will be injured in the simplest manner. This, in the first place, will produce a flat, rasping, jarring and unpleasant voice, even just such an one as we might expect. Another effect *must* be, that this air now being expressed from all points, with the air tube curved and the outlet contracted, must move in a ragged stream, in lieu of one pure, smooth current, and exert a most injurious tendency on the delicate, sensitive, and moist *bronchial* or lining membrane of the wind and smaller pipes, mechanically irritating them, jarring them, and acting on this smooth surface much as a hatter's bow-string does on the fur, cutting it up into shreds; drying up its moisture and irritating its nerves, inducing a sense of dryness and aching, especially on speaking and singing. Soon the surface is denuded, pimples are raised, and the patient is really a genuine specimen of the popular *bronchitis*, or throat disease of public speakers; and, indeed, we find that a great majority of public speakers thus afflicted are young and moderate men, who preach by note, with the shoulders drooped, the chin depressed, the mouth shut, and the lips scarcely moving at all. But let him, though his throat be very sore, change his attitude and speak from the contraction of the abdominal muscles, with the straight tube, open mouth and supple lips, and the voice will change its harsh and flat note for smooth and mellow tones, and the throat will feel better even during the operation.

Another important lesson to be drawn from these views has reference to singers, and another to the form and habits of children in school, and their manner of reading and speaking, of all of which we will speak in the *practical* part of the work. These views are corroborated strongly by this fact, viz.: that almost all broken down public speakers and singers complain much of *weakness*, and of a sense of *goneness* at the stomach, pain or weakness of the back, and other general symptoms of a broken down body. And why is it? Because they are relaxed, and their mechanism answers to the description of others described in the former part of the work.

We have now finished our pathological remarks on mechanical principles, and ask, What is the summing up of the whole matter, and what practical use can be made of the subject? If we have correctly and philosophically treated our theme, may we not infer, in the *first place*, that it is not only proper, but all important, that the people should be instructed in the principles of anatomy and physiology?

Secondly, We infer that most, if not all diseases (providential strokes and pestilences excepted), may be avoided and even cured.

Thirdly, That man is not a mysterious being in his animal or material existence, but is *mechanically* and *philosophically* arranged, under powers and laws that control the reciprocal actions of all matter, in all relations, whether animate or inanimate.

Fourthly, That there is, in this mechanical or architectural construction, but one specific constitution and arrangement, which makes man a perfect and efficient machine, securing a healthy set of relations and functions; while a departure, however slight, from this organization, as in an inanimate machine, changes entirely its character, inducing a morbid set of functions, or the entire cessation of them.

Fifthly, That the vital or moving power of the animal fibre is distinct, originally, from the fibre, and is not susceptible of disease. Of course, then, there must be two physiologies, or, at least, a *mechanical one*, which is the basis of human developments. Consequently diseases usually commence in the mechanical part, and are to be cured by mechanical agencies.

Sixthly, That there is a class of diseases that are not under the cognizance of medicine—proceeding from a displacement of the organs—and would be aggravated by constitutional treatment.

Seventhly, That all the organs from the throat downward are connected together, and all subject to the law of gravitation—all being designed originally to support one another, through the agency of the abdominal muscles.

Eighthly, That the morbid relaxation of these latter muscles

will necessarily produce a general and ruinous disarrangement or breach of the proper relations between the organs within, from the lower to the upper.

Ninthly, That the proper treatment of diseases originating from the above causes consists in the mechanical replacement of the organs in their proper relations, and in attending to such things as will subsequently enable the organs to retain themselves in this position, by their own inherent power.

CHAPTER VIII.

SPINAL AFFECTIONS.

Spinal Affections.—We have heretofore confined our remarks principally to the truncal organs, showing what was their place and action, and what sustained them in this place and action. We now proceed to speak of what retains *man* in the erect posture, and of the importance of preserving that posture. In Figure 5 we have a side view of the healthy, proper and philosophical position of the human trunk. Observe its form, see how hollow the small of the back, and how its front part juts into the abdomen; then notice how the bone slides back like an inclined plane, until it projects back far behind the small of the back, and then slants forward some, so that the head is set about in the axis of the body; but, if anything, its gravity is thrown in the rear of the axis, or small of the back, when the head is carried upright, as it should be. By this time you will have seen that the small of the back is the pivot of motion, and that its centre is the *truncal base* or axis of the body.

When we take this view of the subject, we see a wise provision in nature for man; for although the back be curved, yet these curvatures come in to aid in the formation and preservation of the erect posture. The bend in the lower portion of the back throws the abdomen forward, out of the axis of the body; but the inclination backwards, in the region of the chest, brings a good portion of the chest behind the axis, and this is emphatically so, when the human body stands up in its dignity, with the head erect. Thus we see man stands by the power of balancing. For instance, suppose a stake be stuck in a soft place, and not very firmly; then suppose you hang a small weight from its top; the stick will immediately fall, because the weight is *without* the base or axis. But hang two weights,

one on each side of the stake, and it will stand firmer than before, not being drawn out of its axis. Thus, although by the law of gravitation, the load his trunk continually bears, draws it to the ground, yet if any man preserves his characteristic nobility of form, his *erectitude*, so nicely is the mass adjusted, that it only serves to make him stand the more firmly. But in order that man may perform his ordinary duties, he must have the power of accidentally or voluntarily placing his body out of its axis—a peculiar power which can be called up by the will, or instinct, and by which, after the motion, he may be again recovered to and held in the erect posture again.

This the muscles of the back, abdomen and sides, effect. What, then, should be the *standard* posture of the body, and what the relation of all the organs and cavities to each other? We say that it should be like as in figs. 1, 3 and 5, so that a line dropped from the face would fall along the front face of the small of the back. In that case the head is elevated and set upon the shoulders, and not upon the breast; the chest is thrown out full, the pit of the stomach elevated, the distance from the lower ribs to the hip bones lengthened, and, of course, the abdominal muscles put upon the stretch. Thus the abdominal organs are grasped tightly, and thrown more and more up and back into the centre and axis of the body. By this means there is but little purchase or leverage on the back, as all the organs are packed so snugly. This also expands the chest, supports the lungs and heart as well as the abdominal mass, so that they are thrown towards a focus. In this way the abdominal organs are so lifted up, that they cannot encroach upon the bladder, rectum, or womb. What a beautiful structure this is! What a symmetry and fitness of things in every design of God!

We are now prepared to answer intelligently the following question, viz., what influence will a relaxation of the abdominal and dorsal muscles have in reference to the spinal functions and the erect posture? We reply, that if the muscles relax they let down the bowels; these, falling forward, move out of the axis of the body, producing a leverage on it, and compelling the body to bend, unless the muscles of the back exert an unusual power to antagonize this leverage. Such a position will allow the organs to draw upon the diaphragm, and produce all the feelings before described. It will also bring the chest, shoulders and head forward, somewhat in the form of an *orang outang*, thus compressing the lungs, enlarging the abdomen, and, by this means, imposing, instead of an occasional, a perpetual and heavy burden upon the muscles of the back, to keep the body up. Again; we see, that the small or hollow of the spine is its almost only moveable part, and that when we bend forward or backward, it is through the transposition of

this part of the column; consequently, that when we lop or lounge, it is not the chest that has fallen, as *seems* to be, but, that this pivot or fulcrum of the back has slid backward from under the chest, leaving it to droop, or seem to. This could not have taken place had the primary forward curve at this part been preserved.—See Figs. 7 and 11.

To illustrate. We see that the perpendicular posterior line of Fig. 7 runs at quite a distance from the back, the spine in this figure being in proper shape; but in Fig. 8, the line nearly touches along the whole length of the spine, because the lower spine has receded, and not the upper. To prove this, let any one take the posture of Figs. 7 and 10—and let a friend put the end of his fore-finger against the small of the back, and he will find he cannot droop, but will fall upon his face, feeling a firm pressure from the finger: but let the finger come within only one inch of the back, and he will readily droop, and the back will recede to the finger's end; proving that if the lower spine keeps its place the upper must of necessity.

But our business now, is to find what effect will follow on the spinal phenomena.

We see that the body when erect rests particularly on the central (*or processes*), and not on the broad part of the back bone, and that when the body bends forward, then the pressure is changed to the body of the bone itself. The different parts coming together, press upon the gristle or cartilage which is between them, and which is very elastic. In the state of the system supposed, the pressure upon these cartilages is constant and unnatural. If this is long continued, a tenderness of these will ensue, and an absorption follow, which will bring the rough surfaces of the bones together, producing eventually ulceration, and spinal curvature of a ruinous nature. If this proceed far, it will be indicated by pain in the affected part, and some tenderness on pressure, and perhaps there may be loss of motion in the limbs. This state indicates an inflammatory action, and requires the usual practice of cupping, leeching, blisters and issues, or tartar emetic sores.

But we now proceed to show that this state seldom exists, and that the following mock symptoms are taken for genuine spinal irritation, which are very different, and require directly another treatment.

When the body is bent forward, as in Figs. 2, 4 and 6, the spine is nearly straight, and we see that the ligaments that connect the bones of the back are put upon a perpetual stretch, and would be liable to become tender.

The muscles are now continually called upon for effort, either voluntary or involuntary. This we know must be followed by fatigue and exhaustion, and just in proportion as they become fatigued, they are obliged to make extra effort to

act like other muscles, as in ascending a high steep hill. At first our limbs are capable of the extra exertion required, but they soon flag, and as we near the top we are required to put forth the most powerful efforts to make even a small advance. Let our limbs be compelled to struggle for a great length of time when thus weakened, and they will become tender, tremulous, and unable to perform their most ordinary tasks. Thus it is with the muscles of the back. The result is just what we are led to expect. When patients come to me who have indulged for some length of time in a droop-shoulder position, they will generally complain more or less of the feelings previously described, in connection with the following; viz., a constant pain in the back, particularly in the small of the back, generally *unaccompanied* with inflammation there, although some are often supposed to have it, and are treated for *nephritis* (or inflammation of the kidneys). They complain also of inability to sit erect, and of pain in the breast and stomach when they attempt it. This is generally accompanied with feebleness of the legs, and at times with loss of sense and motion in them.

The crooked form of the back, the pain there, and the difficulty in the limbs, generally lead to the idea that there is spinal irritation. The physician is pleased to believe that *this* is the case, as almost every ordinary remedy has been tried without avail. New hope springs up in his mind, for genuine spinal irritation *can generally be cured*.

Accordingly, before coming to me, the spine of the patient has been examined, and being found *somewhat* tender, the whole train of depleting and irritating remedies are resorted to; but after all, the patient rather grows worse. I examine the spine, and find *not* spinal irritation, but spinal *weakness*, and *that*, generally confined to the soft parts, and *not* to the back bone.

When there is *genuine* spinal irritation, pressure on the inflamed part will be accompanied with a sudden start, and the patient will generally speak of pain in some part of the trunk. I then commence at one extremity of the spine pressing each bone successively, inquiring if the pressure hurts. "No!" is the answer at first; but presently the patient says, "Y—e—s," or, "it is tender"—"it feels weak;" but there is no sudden flinching, starting, or outcry, indicating that there is no genuine spinal irritation.

In such a case, then, there is a spinal and muscular *weakness* and soreness; the cartilages and ligaments are tender, and the muscles, all worn out with continued effort, have become *cross* and *tired*. The truth is, that three-fourths of the cases treated for spinal irritation are of this sort, and this explains a great share of our ill-success in these affections.

I need say no more by way of illustration upon this subject;

the reader will see that there is a wide and perceptible difference between spinal irritation and spinal weakness, and of course that the treatment of the two should be *very different*, and that what is proper and applicable to one is entirely vain and worse in the other case.

Hence, it is evident that spinal weakness proceeds from the loss of balance of muscular action.

Spinal curvatures and distortions of the hip and shoulders have become very common; so much so, that one would suspect something more than an incidental cause for it. We see spines curved in the shape of an Indian's bow; like a letter S; bulging out, backwards or forwards; one shoulder much higher than the other, and also one hip protruding. Now when, and in whom, do we see this? What have been their habits and circumstances of life? Generally they are females who have been indulged, and have lived luxuriously. They have taken *no regular exercise*, have not been systematic, but have lived upon romance. They sit at the drawing-table in at least a drooping posture, generally on one hip, and when sitting, let the whole trunk fall out of the axis of the body, putting the muscles of the back upon the stretch. When standing they rest more upon one foot than the other, standing in a perfect twist. Now let us examine this unnatural management in a philosophical point of view. By sitting upon one hip, the axis of the body is changed, and to prevent falling, the body has to bend toward the hip upon which the person sits; of course, then, instead of the axis running down the spine, as it should, it crosses the spine, and (if the person sits upon the right hip) runs from the left shoulder to the right hip, passing through the body. The first thing to be noticed is, the effect of this diagonal weight upon the spine. We see that the spine will now have to sustain a great purchase, and will be bent into a single or double curve, one of which will generally be between the shoulders, pushing one of them out, making it to appear larger than the other, and to appear diseased, when it is well enough, if the spine were but in its proper place; this shows the futility of binding on brass to compress the shoulder. Again, the other shoulder will be quite low, and it may also be supposed to be diseased. The truth is, the muscular power having lost its balance, and pulling more on one side than the other, causes the whole difficulty. Let us see how the antagonizing power is lost, and how it acts. When you stand on one foot or lounge on one hip, the muscles of the side on which you stand or sit have to act more than usual, to draw you over and preserve you in a new axis; this draws down the shoulder of the side on which you rest. Of course then the muscles of the other side have nothing to do, so they relax and are passive, and this allows the shoulder to be thrown up

Try the experiment now, reader. Stand upon one foot, and see if your whole body does not have to lean much to the side on which you stand, and if this shoulder is not lowered, while the other is elevated. Then suppose that this position were to become habitual, how much more aggravated these natural consequences would be. In this light may we see the philosophical cause of spinal curvatures, drooped or elevated shoulders, with all their results. What is now wanting is, to bring the body back to its axis, and to re-establish an active state of the torpid side, and diminish the action of the already active side. This can only be done by a system of exercises, philosophically adapted to each individual's case. This subject we shall treat more at large in the final chapter of this work.

Another not uncommon cause of curvature is, that ladies who are tall are often ashamed of it (ashamed of their glory!) and continually practise a cringing, crouching, or settling of the body, to lower somewhat its height. The effect of this posture must be evident to you all.

Also in those who are even low of stature, the same cause and effect exist. The present system of education for young ladies is *abominable*. They are taught to be neither muscular nor frank; to look no one in the face, to observe a sort of *Grecian bend*, which is the pink of the mode—a *perfect caricature on human dignity and symmetry*. And here we remark generally, that the present system, or rather *no system* of physical education, lies at the foundation of most of these formidable complaints, and that until parents wake up to the importance of establishing proper habits in children, and of forming a healthy and physical *system* for them, as well as to the cultivation of the mind, we shall continue to be a proverb and a *b*y *w*ord for physical weakness and deformity.

PART SECOND.

CHAPTER I.

THE CURATIVE INVENTIONS AND AGENCIES—BRONCHITIS—WEAK AND UNNATURAL VOICE—TREATMENT AND CURE—AFFECTIONS OF THE LUNGS—SYMPTOMS OF AFFECTIONS OF THE LUNGS—CALISTHENIC EXERCISES—RESPIRATORY EXERCISES—PALPITATION OF THE HEART—HYSTERIA—HYPOCHONDRIA—DYSPEPSY—CALISTHENIC AND GYMNASTIC EXERCISES.

The Curative Inventions and Agencies.—With a view to carry out the principles laid down in the preceding parts of this work, we have devised a mechanical appliance as a curative agency. This instrument is the result of years of perplexity, anxiety and expectation, until at length it has been brought so near to perfection as to secure the desired object with great facility and astonishing success.

We will first speak of other mechanical appliances, with their good and bad tendencies, proved by experience; afterwards we will call the reader's attention to the one referred to above.

In the first place, it is obvious that support applied to remedy the gravitation spoken of in former pages, should act upward and backward unitedly—this being the action of the healthy muscles—without compressing the calibre of the abdominal cavity. Every *weak* place and no other should be supported, and this should be done in such a manner that no inconvenience or hurt will be experienced. The appliance that most nearly fills all these pre-requisites is the one most to be desired and first to be selected. We will here remark, that the poorest instrument to effect this purpose that we have ever seen has had some good qualities, and has been better than none, even doing much good—so important is abdominal support. The great objection to the first supports was that they were cumbersome, wearying and irritating by their weight and stuffing; their springs, also, pressed on the different bony pro-

minences, tending to produce excoriations. Again, the pads were but two in number, and were immovable, producing fatigue by continued appliance. But their chief deficiency lay in their lack of affording *upward* support; for this object the front pad was too large, and its outer and inner face stood perpendicularly, and served to compress the lower belly, and not to elevate it, often confining the pelvic viscera, or lower organs, more than they were before. The upper part of the pad pressing too much, forced the bowels towards the back, crowding them down, and producing sickness and a sense of sinking at the stomach. The immovable back pad also produced soreness by its continued pressure. Other instruments consisted of two pads attached or connected by straps, but these straps brought too much pressure on the upper, and not enough on the lower abdomen; besides, the pressure in an emaciated abdomen would be as much downward as upward. Other instruments lift upward, but are irritating, having no springs to increase the flexibility; nor can the pads be changed to relieve the parts, or be materially enlarged or diminished to suit subjects of different sizes. Others consist of jackets, or corsets, and some of these, in very many cases, have done great good; but they all lack the general indications and physiological constructions—they press *everywhere*, and on *all points*; of course, in some places where no pressure is requisite, and where it actually does injury, through its irritation and heat. Besides, they cannot possibly give all the elevating power that is required.

The instrument we now present to the reader, as our own invention, denominated *Patent Lace*, assumes to fulfil the above requisitions, and to avoid the disadvantages of the others in use. We give an explanation of its arrangements and operations. (*See Plate.*)

In the first place it consists of a main-spring, adapted to the body so as to touch no bony surface. Next there is a pad of horn, or ivory, made to fit the abdomen in front. This pad is attached to an elliptical and curved spring, making it very easy, and, at the same time, turning it upward, so as to allow the belly to rest upon it. Behind are four pads, all of them on small curved springs: two resting upon the small of the back, and two upon the weak hips. These can be raised or lowered, separated from, or approximated to each other, changing the point of contact, as the patient pleases. Cushions can be applied to the pads by means of the drilled holes, should it be desired. It acts when pressure is wanted, and when the body is in a state of rest, is cool, light and comfortable; it supports all the weak parts, can be accommodated to a diversity of sizes, and when well fitted, produces no inconvenience.

FIGURE I.—THE LACE.

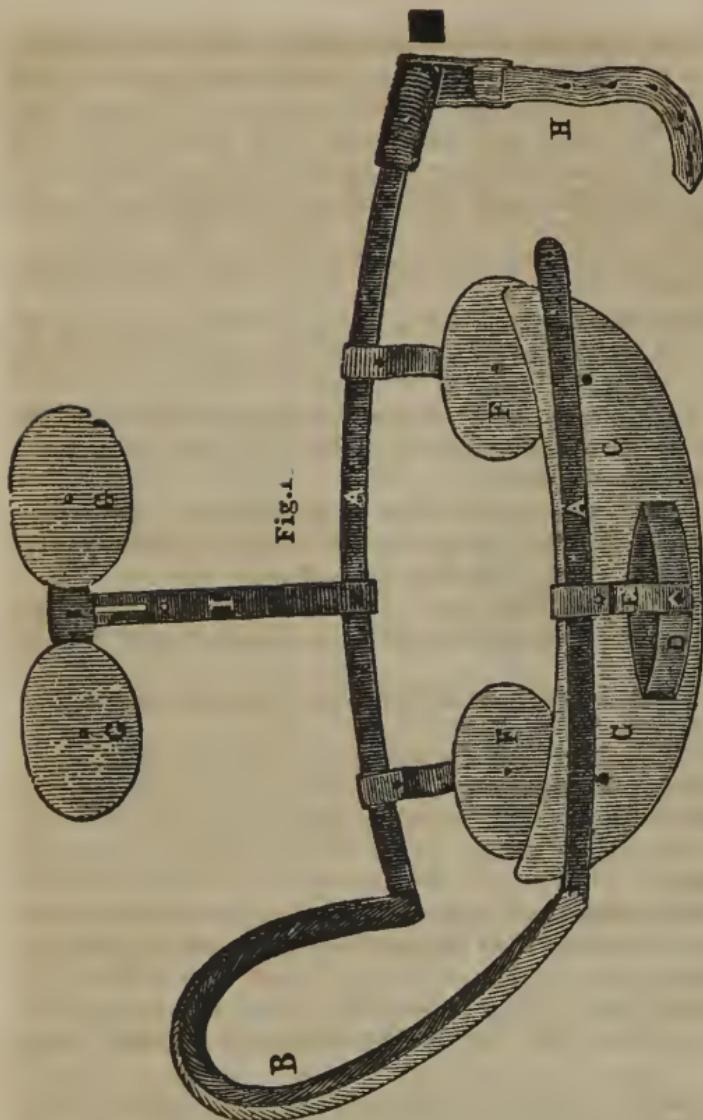
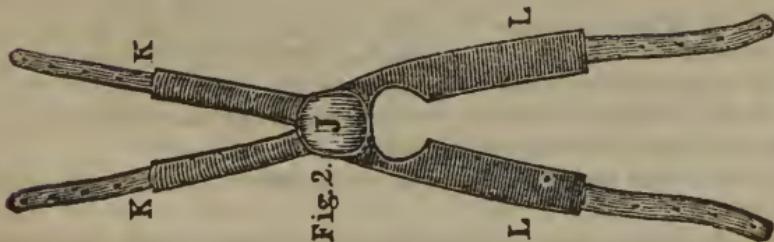


FIGURE IL



I. Pad, resting between the limbs. How and when to use it, see Directions.
 K. Back straps, hooking on to F F.
 L. Front straps, hooking on to hooks on C C.

*EXPLANATION OF FIGURE I.—*A. Main spring, passing round the body.—B. Bow, passing above and avoiding the hip.—C. Front pad, at the lower abdomen, looking backward and upward, *lifting*, not pressing, the body.—D. Elliptic spring, which gives flexibility to the pressure, and an upward action.—E. Perpendicular curved spring, that gives the upward action to the pad.—F. F. Pads supporting the weak hips on limber springs.—G. G. Pads supporting the back opposite the kidneys, and can be moved up or down, separated or approximated, or be shoved to right or left, to accommodate different sizes or spinal curvature. There are small holes left in all the pads, through which cushions may be stitched; but this is almost never done, as the springs are so limber, and the patient prefers the cool pads—H. Strap passing round the left hip, to fasten on the instrument.

The particular properties of this instrument will be developed in the detail of its application in numerous cases, where astonishing results have been realized. It does not excoriate, bruise, or chafe; through its many springs it is very flexible, and can be worn in warm weather, when no other can be borne. The following description may assist in the better understanding of its virtues.

A. A. A. Main-spring passing round the body, and sitting firmly like a saddle.

B. Curve in the main-spring, passing over the hip, so as to avoid pressure upon it, fitting snugly between this bone and the ribs.

C. C. Front pad, fitting just above the prominence at the lower belly, so as to feel comfortable, and support the whole weight of the abdominal mass.

D. Curved spring passing from the main-spring to the elliptical spring on the front pad, so as to turn its inner face upward and inward, giving the pad a lifting movement.

E. E. Elliptical spring fastened to the outside of the front pad; it is very limber, giving the pad a movement like a buggy-wagon.

F. Nut connecting the curve and elliptical springs, thus fastening the front pad.

G. Stud at each end of the main-spring, to which a strap is attached, serving to connect the two ends of the main-spring when round the body, and to make the *lace* permanent.

H. H. Oval pads resting on the small of the back, upon each side of the spine.

I. I. Horizontal curved spring, supporting the oval pads H. H., pressing them forward into the back, and keeping the main-spring from the body.

J. J. Slits in each end of the spring I. I., to allow the pads to be moved to or from each other, as ease or necessity may demand.

K. Upright straight spring, on which I. I. is supported.

L. Slit in K., or upright spring, permitting I. I. to be lowered or raised at pleasure, to prevent excoriations by long pressure.

M. M. Oval pads, resting upon the fleshy part of each hip.

N. N. Curved, perpendicular, flexible springs, on which M. M. are loosely fastened, extending below the main-spring A. A.

O. O. Screws, connecting the pad M., and spring N., together.

P. P. Studs, on which to fasten the *perineal* straps as they ascend from between the limbs.

Q. Q. Rear straps to the *perineal* pad S., which are fastened on to the screws O. O.

R. R. Front straps of the pad S., which fasten to studs P. P.

S. *Perineal* pad, resting on the part between the two passages, and supporting it.

It will be observed in general, that all the pads can be moved in every direction to avoid irritation, or to accommodate different forms, sizes and deformities. The groundwork is now fairly laid for rational remark on the prevention and cure of those diseases which arise from the previously described relations of the organs of the human trunk.

To this task we now proceed, following the same plain and easily comprehended plan and illustrations as in the former portion of the work, and refer only to those remedies that have been suggested in a mechanical survey of the human system. As to constitutional treatment, let it not be supposed that we have forgotten it, or that we discard it altogether, because we do not fill our little book with its details. This would not comport with the genius of our work. Others have done well enough here; but our province is, now especially, the *physical* treatment, and we shall only occasionally speak of the internal treatment, as laid down by the best medical writers.

Of bronchitis—weak and unnatural voice.—What is the ordinary bronchitis of public speakers? It seems to be a diseased condition of the lining membrane of the throat, wind-pipe and air cells.

The varieties and degrees of this disease are great and multiplied, some of them evidently indicating a constitutional cause, and, of course, require a constitutional treatment. All the causes of this complaint we shall not pretend to enumerate and examine in detail, but content ourselves with saying, that there is one grand distinction between them, viz., local and constitutional. With the latter we shall not meddle; and indeed it must be left to the keen discrimination of the skilful practitioner to decide whether they are local, or physical, or constitutional. Perhaps the most common cases are of a *mixed* character, partly physical, and partly constitutional, requiring both classes of remedies. If we look into the throat of the public speaker, or any other person that complains of this affection in the throat, we shall find some, or all, of the following symptoms, viz.:—Either a pale, relaxed and flabby state of the membrane, or a thickened state of it, with a very irregular surface. But more commonly we see an irritated appearance, having no prevailing color, but red in patches, with specks or points of ulceration here and there. There will usually be a sense of dryness and roughness in the throat, and an aching, which is aggravated by speaking or singing, producing a hoarse or flat voice, easily distinguishable from the natural, by any close observer. The voice sounds husky, and is painful to the sympathetic ear, as well as to the throat of the speaker. The patient ordinarily feels great indisposition to speak, and does this, when necessary, in pain or uneasiness. These, and the other local symptoms, are accompanied by

some sympathetic and constitutional symptoms, such as headache, occasional fever, and nervous irritability in general; and in almost all cases there is more or less impairment of general health.

Our present attention to this complaint is more especially confined to the bronchitis of public speakers or singers. In order to be understood and guided in our treatment, we must call to mind the philosophy of voice in its perfect development, as given in the first part of the treatise. It is, in the main, embraced in the following considerations, viz., the erect posture; the elastic muscles of the abdomen; the broad chest; the lungs compressed from below; the elevated chin, and the widely opened mouth, with great suppleness of the lips. Thus all the vocal organs and relations are brought into their proper position, and the air can be expelled in accordance with the philosophy of all power and motion. But who are they that are afflicted with the disease now under consideration? They are the relaxed—the feeble—those who generally sit, stand and walk in the curved posture—those whose shoulders droop—whose heads are bent forward, and whose chests are generally somewhat compressed. They are persons that do not enjoy constant or regular exercise in the open air, like the farmer; they are either mechanics, or the literary class of people. More generally they are teachers and public speakers, and of the latter class, ministers of the gospel are the most common subjects; next to them lawyers, and those who are moderate men, who preach *calmly* by note, at a low desk, with the head depressed, the shoulders drooped, and the mouth not freely opened or moved. Ladies also, who are highly *accomplished*, who are confined much to the piano or drawing-room, and who take little exercise, are also the proper subjects of this complaint. Let us now take up the case of a good minister, who preaches by note from a low desk, and who walks drooping, and inquire what are the actual relations of the vocal organs, and what must be the consequence of a morbid set of relations?

First, then, he bends forward; this relaxes the muscles of the abdomen, and lets down the abdominal contents from supporting the diaphragm, as in figure 7, but acts as in figure 8; and thus he loses the proper vocal leverage (as formerly illustrated), the very starting point.

Next he contracts the dimensions of the lower chest, and, of course, compresses the lung there, compelling the superior lobes to do more than their part. Next, he has to speak by the contraction of the chest, bending forward, and drooping his shoulders, and not by the contraction of the abdomen, as he should. In this way we see that he applies the expelling power at right angles, and not in a direct line. Of course,

then, it requires more power to effect the purpose, and there will be more force exerted upon the tubes or air cells, inducing a straining or concussion in them, which is at once unnatural and injurious. Besides, under these circumstances, the air is not expelled directly upward, but in all directions—downward as well as upward, and thus a general concussion is produced, together with a confused and vibrating motion, very unlike that desired, viz., a smooth melodious sound.

It must, then, vibrate or vacillate along up the bronchial tube in different streams. As the head is bent forward, we find the tube acutely curved, forming a natural obstacle to the progress of the air. It strikes the palatine arch, or roof of the mouth, and is thereby again concussed, producing a general vibration in the whole column of air, and, of course a more extensive concussion of the lungs.

In this way the air is expelled by a continual pressure, in lieu of the alternating pressure and collapse of the abdominal muscles. This will act upon the bronchial membrane, just as the hatter's bow-string acts upon the wool or fur, cutting it up into fine shreds; or, as the wind acts upon a banner in the air, fretting and whipping it out in a short time. So, in this case, the membrane will be fretted and irritated, made so by concussion, and the congestion of the blood in it, invited there by the irritation. Its secretions will be dried up, the surface become rough, causing an aching or choking sensation in the throat, a gasping and grating in speaking, with a general jarring and shaking throughout the whole chest, which is very observable by placing the hand upon the breast. Again, the mouth is not opened freely; the exit for the air is therefore not commensurate with the volume which is passed upward and seeking an aperture. Here, then, is another mechanical obstruction to the air, which will increase the concussion, and the confusion of the air, scattering it in all directions. Some of it will escape through the clenched teeth, or the elongated mouth, a shape not celebrated for producing the proper and various sounds of the vowels. Some of it is forced backward, and out of the nostrils, producing a splintering, whizzing and nasal sound, so peculiar to the people called *Yankees*. The lips also are stiff, and not supple; of course they do not perform their part in forming the sounds into articulate or distinct words, the throat having to do the whole, thus inducing soreness and fatigue. This is peculiarly the case with those *accomplished* ladies, who are taught the *Grecian stoop*, and to speak with downcast face and eyes, closed mouth, and stiff and puckered lips.

Now, with the true philosophy of voice before you, and the morbid practices of the subjects of *bronchitis*, what, we ask, will be the proper course of treatment? Will medicine or a

change of climate effect a cure? Certainly not. But there must be a return to the laws of the vocal apparatus; let obedience be yielded to these, and nature will then perform her functions.

Treatment and Cure.—To the public speaker, then, we would say, “ You must stand erect; elevate the head; open the mouth fully, and move the lips supply. You must vary the shape of your mouth, so as to cause the various vowel sounds to be clearly emitted. You must relax and expand the chest, and not contract it. You must forget, for the time, that you have a chest, and concentrate the will upon the abdominal muscles, and effect their sudden contraction at each syllable, as you do when ejaculating the sound *sh*, while driving away an intruding animal.

In order to meet these requirements, you must leave off, if a minister, preaching by note, or else elevate your pulpit, and use an inclined plane for a desk, thus bringing the whole manuscript near to the eye. The pulpit should (where the sermon is to be read) be so high that you can stand erect, and at some distance, and yet read distinctly, without bending the head or back, merely casting the eye upon the page. In this way you may be eloquent; you can see your audience, and they your *face*, and not the top of your head; you will thus preach to *them* and not to the *desk*, while their attention will be held by your animated countenance and gesture. Your voice will be clear and of a large volume; pleasant alike to yourself and to the hearer; and though your throat be sore, dry and stiff, you may continue to preach and yet feel the better for it, while your position is proper, and your vocal organs all performing their appropriate work.” In this way, a person may be able to sing, although the voice may have been previously so flat and insipid as to have disgusted and discouraged the person himself. This explains the oft-repeated injunctions of music teachers, to hold up the head and open the mouth wide. This shows the reason why Methodist ministers and lawyers have less of the *bronchitis* than other speakers; why children and Indians are never hoarse, and why the same is true of all animals, as the noisy dog, horse, ox, &c., these all making their peculiar sounds through the agency of the abdominal muscles.

Then let those that sing hold their books high; have the waist free, the chin elevated, and the mouth well opened. Let them not use the throat so much, neither the lungs, but the mouth and abdomen. Also recollect, that it is the genuineness and not so much the amount of abdominal effort that is wanted, for by making too much effort, too much air is expelled, and too rapidly, producing a ragged and rasping sound—paining the throat.

It is astonishing how persons improve who commence to practise these simple rules, and persevere in their attention to them. It may be often a laborious task to get well under way, but patience and perseverance will most certainly secure the victory. But many are so weak at the back, sunken and gone at the stomach, debilitated and discouraged, that they usually will not and generally cannot enter determinedly into the matter, so as to come up on nature's plan (which in fact is ineligible), and need artificial support to aid and start them. In which case the *Lace* should be used early, and it will appear surprising how soon they will revive, and recover strength. The proper way is, for those who labor under physical debility to early use the lace, in *public exercises*, to avoid the threatening downfall. I will now give a few of the numerous cases which have come under my notice, in testimony of the truth and practicability of the above remarks.

CASE 1. The author of this work was, from the age of 14 up to 31, afflicted with a morbid voice, and weakness of the breast. My voice was disagreeable to all, partaking even of the ridiculous—now, it would be high, much like the noise of a *gosling*, next it would be broken up and splintered. I was always out of breath in talking, and ended the shortest sentences in a whisper. My attention was first called to the influence of the abdominal muscles in vocal operations by Mr. Bronson. His views assisted me very much, as I was then preparing a work on the influence of gravity on the truncal organs. I soon commenced a rigid discipline, and submitted in all respects to the above requisitions. Soon my voice was materially improved, in tone, volume and melody. It has now become quite stable and regular, and I can even *sing some*. Previously I would break down in a few moments, when delivering an animated discourse; but now I can (and *have done it*) address a large audience for three hours on a stretch, with ease to myself and distinctness to the audience. My vocal labors are now almost unceasing. I lecture about three hundred evenings in the year, and talk almost constantly throughout the day. My health improves under these labors, and my breast is strong. I should also state, that I increased the length of the lesson on the voice every day; at first, vociferating loudly by myself, and at the same time practising percussions of the chest with the open hand, increasing in violence as I could bear it.

CASE 2. Rev. Mr. S——, of Hartford, Conn., consulted me on account of his voice. He said that for years he had been expecting to be laid by, and even had been, at times. He was subject to debility and gloom, and yet felt a strong desire to preach (there was, at that time, much religious feeling in his congregation), but felt that he must give it up. I observed

that his throat was sore, red, and irritable, and that he had a cough. His breast was weak, and his stomach seemed to sink away.

I told him to preach no more by note, or else to elevate his desk; to stand erect; hold up his head; speak slow and distinct, and to open his mouth wide, and move his lips, thereby relieving the throat of the concussion, and rasping of the air—to speak, in short, not by the chest, but by the abdomen, especially by the voluntary contraction of its muscles. Two days after he informed me that he had preached longer, louder, and more to the enjoyment of himself and his audience than he had ever done before. He became a perfect convert to the system; proclaimed it wherever he went; advised all to attend the lectures, and for his ardor received the unfortunate title of a *Banningite*.

CASE 3. Rev. Mr. E——, of Trumbull County, Ohio, an Episcopal Clergyman, was much troubled with low spirits and gloom, together with weakness of the stomach and breast. He always preached in the bent posture, his shoulders drooped, his chin resting upon his bosom, the top of his head turned to the audience, and his face to the desk. As a consequence, his tones were monotonous, his gestures weak, and the whole performance devoid of everything but good sense and valuable instruction. He attended my course of lectures on the mechanism and philosophy of man—they closed on Saturday evening. I went, on the succeeding day, to hear him preach. From what I had been told, I expected to hear a most miserable performance, but to my surprise, he was erect and noble in his manner, animated in his subject, and feeling in his address. After church, he introduced himself to me, and said—"Sir, you have been of use to me. To-day I have preached louder and easier, ten times over, than ever I did before. If I can judge correctly, sir," he continued, "you will bless the world, and do incalculable good."

CASE 4. Miss H——, of Middlesex County, Conn., who had been an instructor of young ladies several years, came to consult me about her voice, which although formerly good, had been of late failing, and her throat was sore, dry, rough and painful. Her general health was also affected. She must necessarily use her voice continually, and spoke with great labor and effeminacy, in short, her voice was very flat and insipid. She was taught (and taught the same to others), that it was improper and immodest for *ladies*, at least, to open the mouth when they spoke, and move the lips freely; and that it was too masculine to walk erect, holding up their heads like *innocent beings*; but that the head must be bent down, the shoulders thrown forward, and the stomach retracted. Accordingly, she had studied to set the example; had become a proficient

in that *apish* shape, called the *Grecian stoop* or *bend*. Discovering immediately the cause of all her difficulty, I explained it to her, and her good sense and keen perception of propriety soon grasped the whole idea, before even I had finished its exposition. She begged me to stop. "I see it all," said she, "and am sick of it already." She accordingly changed her attitude to one more proper and dignified, and so evident was the change that she was not recognized while walking the street. She also took lessons in vocal gymnastics, and in her first lesson found surprising relief. She was compelled to make great effort to bring the muscles of the abdomen into subordination, and to lay the chest at rest while speaking. At length, making a desperate effort, she succeeded. The voice came forth from her mouth, clear, smooth, and liquid. Clapping her hands, she instantly exclaimed, "I have got it!" Upon returning from school the next evening, she informed me, that she had taught that day with pleasure and ease, and that she had been able to sing in school, which had been impossible before, on account of the flatness of the voice. Her throat was evidently better, her respiration free and full, her pulmonary circulation unobstructed, and she was restored from a state of mental depression to new life again.

CASE 5. Rev. Mr. C. D. N., at Springfield, Vt., was said to be about "*done over*" with consumption. His congregation was large and greatly attached to him. He was subject to bad night sweats, and great general debility; his voice was weak, flat, and husky; his throat sore, and irritable, and his cough was very troublesome. Everything that kindness could devise had been done for him, and he was now given up to die. He called upon me for advice. I found upon looking into his throat, and hearing him speak, the whole cause of his difficulty. He had accustomed himself to speak with his mouth nearly shut, his throat curved, chest contracted, and abdomen relaxed, thus inducing all the specific effects of such a morbid state of things. I found also that his palate was very long, resting upon the root of the tongue and *larynx*, or entrance to the windpipe, irritating the laryngeal membrane, and the bronchial, aggravating all the other bad tendencies. Upon clipping the palate, applying the lace and improving his attitude, elevating his head and compelling him to speak according to the directions above given, he returned to his pulpit, his cough ceased, his voice and throat improved, his countenance became dark and rugged, and he was almost completely reinstated, in every respect, to the astonishment of the medical faculty and his own congregation.

CASE 6. Rev. R. F. L., at C., N. H., was an eloquent and excellent man. He found his health declining, his voice weak, his throat red, irritable, rough and ulcerated. There was con-

tinnally a painful sensation there, but more especially upon speaking. These symptoms were accompanied with the usual and dreadful gloom and depression of spirits. On preaching the first sermon after hearing my lecture and attending one lesson upon the voice, applying the Lace, found himself relieved, and he continued to improve, so that now he preaches three sermons on the Sabbath, with an animation unusual to him. Said he, with tears in his eyes, on parting, "I am willing to go and put up handbills for you; you have given me new life, new hopes, and restored me to usefulness."

Case 7.—Rev. Mr. B., Meriden, N. H., was another patient of the same class; a modest man, regular, sound and systematical. He preached in a low tone, and from a low desk. He was about giving up, and leaving the field, but upon the application of the Lace, and practising the simple directions above given, he found himself greatly improved. Said he to me one day, "Doctor, what a load has been taken off from me? Before this, I have looked forward to a painful period of *uselessness*, but now my prospects are reversed, being brighter and full of promise; the world could not purchase from me the change I feel."

What are the practical inferences to be drawn from the above facts? We answer. 1. That the habits of sedentary men are, in general, very bad, and tend to extensive derangement of the functions, and that they should cultivate the erect posture at all times, and put in practice the rules above laid down in speaking. 2. That singers should be erect, permit their waists to have perfect liberty of motion, and throw the chest out full and broad. 3. That it is all important that children be early taught to sit erect, and walk so also; and that their seats and desks should be high enough in school, to unconsciously beget in them the habit of being erect. They should be taught to move erect, to hold up the head at all times—to hold the book high in reading—open the mouth wide, and speak loud, slow and plain—not blubbering over the sentences as they are often allowed to do. They should daily be taught in vocal gymnastics, or, in other words, these exercises should be introduced into common and high schools as an important branch of education—beginning with the vowel sounds, then proceeding to the consonants, and next to words and sentences—teaching the children to expel them with great force.

There should also be taught, once a day at least, a set of calisthenic exercises, such as are calculated to expand the chest in all directions, strengthen the muscles of the chest and back, and produce a fulness and roundness in the whole trunk. In this way the old saying may be fulfilled—"Just as the twig is bent the tree's inclined."

Affections of the Lungs.—The affections of the lungs are multiplied in number, and very varied in degrees of fatality; yet all of them, considering the delicacy of the affected organ, if they are permitted to go on uncured, tend to a fatal termination. In our practical remarks on these diseases, we shall not attempt to speak distinctly of them all, but in general terms, and on general principles, as it will already have been seen that there is ordinarily an identity in the cause and perpetuity of them all, however varied they may be.

We will briefly enumerate the feelings and symptoms to which we allude, and then proceed to speak *first* of their character, *secondly* of their pathology, and *thirdly* of their cure.

Symptoms of Affection of the Lungs.—Bleeding at the lungs; cough; shortness of breath; pain in the breast, dead or dull, fixed or wandering; tightness of breath, as if breathing through a sieve or gauze, and a sense of pulling or tightness in the centre of the breast, as though there was something drawing at the pit of the stomach when attempting to inhale a full breath, or to sit erect and shove out the chest.

When all or a part of these symptoms are experienced, the attention and anxiety of the patient will be excited. The great question now to be settled is, are the lungs injured by organic disease, or are these phenomena only functional or symptomatic, without any disorganization of their substance? Upon the correct issue of this important question, is determined the character of the case; by it is decided the prospect or *no* prospect of successful treatment, or, in other words, *life* or *death*. If they are disorganized, i. e., their substance and structure invaded, the prospect of cure is diminished and doubtful, and that, just in proportion to the extent of the disorganization. We will now suppose that all or a part of the following morbid relations are existing in connection with the symptoms of disease above cited, and when there are none of them, then, although all the symptoms are complete, our views do not apply to such cases, and they must be treated in the best way we can, with other than physical or mechanical remedies. But be it remembered, that such are almost unsupposable cases, so that if the cause be not entirely mechanical, it may be partly, and thus require a corresponding treatment. But let us examine the *body* in the light of philosophy, and see what are its relations. The patient may be either sitting or standing during the examination, and we will commence the inquiry in view of the mechanical relations previously laid down, without any direct reference to the vital principle.

The body *should be* erect, the shoulders high, the chest full, the short ribs playing freely, the lungs at perfect liberty, the abdomen round and firm, the stomach full, the back well curved inward, and the bowels elevated, supporting the dia-

phragm. This would constitute the general mechanical physiology of man in a healthy state.

But what do we find to be the case of our patient? In sitting he droops the shoulders, and brings them forward, curving the back, while the whole trunk sinks. This position turns in the breast bone, and compresses the ribs and lungs. The abdomen is relaxed, as in Nos. 2 and 4, and becomes hard and large at the lower belly, and small and soft at the waist, with a retraction. In this case, if the muscles are relaxed, and the bowels descended, the stomach, liver, and other superior organs are compelled to descend, or to lose their support. Of course, they draw down the diaphragm, and produce the sinking in the stomach, leaving also the heart unsupported, putting the mediastinum on the stretch, and forming a vacuum between the lungs and the diaphragm. This will cause the surrounding atmosphere to crush in the walls of the waist, and compress the lungs, diminishing the size of their cavity.

We see that in lieu of general support, there is a great dragging and falling, pressing the organs below the bowels out of place, and inducing all the difficulties of which we have spoken at large in the preceding pages. This explains the reason why these symptoms so often attend consumption, and accounts for the pains in the sides and stomach, and for the short and painful breathing, the lungs (the lower lung) cannot be opened or expanded, the air is therefore shut out, and the upper lungs have to do the breathing. Therefore, before asking a question, we see that the *machine* is deranged, that the philosophy of respiration is interfered with, and that we might expect the same results and feelings of which the patient complains. In the standing posture, the patient complains much of weakness of the back, weight in the abdomen, sinking at the stomach, and tightness in the centre of the chest. After looking awhile at the patient in his ordinary, crooked posture, we direct him to straighten up, throw back the shoulders, and shove out the chest. He will immediately fall back, saying that it pains him to stand straight, that it pulls at the pit of the stomach, increasing the tightness of the breast, and the shortness of the breath. Why is it? Because when the patient raises himself, he has also to raise the bowels, and that produces the tension and gasping.

Now, genuine consumption consists in, or is accompanied by an obliteration or obstruction of the air cells in some way, thus disfranchising the system from the use of a part of the lung, and just in proportion as this is the case, respiration will be imperfect. Be it remembered, that genuine consumption consists in the decreased capacity of the lung for receiving air; so that if by *any means* a large amount of air can be inhaled, you need not have much anxiety about consumption.

Also, let it be remembered, that there are two ways in which air may be shut out of the lungs, viz., by disorganization and by compression. The next thing to be attended to in the examination is, to see how much air can be inhaled in the sitting and standing posture, and if a full inspiration is effected in these postures, well; the case is not tuberculous, nor is there any disorganization or obliteration of the cells. If the lungs are in this case really diseased, it must be of a scrofulous taint, or an inflammatory action in some of its stages, as a chronic in *bronchitis*. but if he cannot inhale freely, we must next ascertain whether it proceed from disorganization, compression, or mechanical disarrangement. To accomplish this, two means may be adopted, viz., either place the patient in a recumbent posture, with the shoulders low, directing him to inspire as freely as he can. If he succeed in increasing the amount of inspiration, it is encouraging. If he increase it much or breathe freely, expanding both sides and all the chest and abdomen, so much the better; for this shows that the former shortness of breath proceeded from compression and not from disorganization. We now permit the patient to stand, and placing one hand upon the small of the back, pressing firmly upon each side of the spine, the other hand being placed upon the lower abdomen, open and firm. We now raise the hand upon the abdomen, gently but firmly, toward the stomach, as if intending to crowd the whole abdomen into the breast. After the patient has thrown back his shoulders, and shoved out his chest (which he can do when thus supported with ease), direct him to make the fullest possible inspiration. If he cannot now breathe better than before, his case is *bad*; but if his respiration is improved, his cure is, to say the least, probable, if he follows a right course of treatment.

But should the symptoms be of a mixed character, and not as satisfactory as you might wish, then resort must be had to percussion or auscultation. First try percussion; this may be done in various ways. In all cases, the chest should be bare, or nearly so. Placing the fingers of one hand flat on the chest, thump on them with the fingers of the other hand. Do this upon every part of the chest with careful attention. The chest should emit a hollow sound throughout, and of a uniform character. If in some parts the sound is like a hollow churn, and in others dead and flat, like tapping upon a rotten log, it is an indication that the lungs are badly compressed. In lieu of the fingers, a dollar may be placed flat upon the chest, on which to rap. It is also to be noted whether one side of the chest is not fallen in more than the other. Next by auscultation, or listening to the sounds in the chest. To treat of this fully, would be to treat of a whole distinct science; we shall only speak of the most obvious phenomena. Some use a

stethoscope, but I have used my naked ear. The air, when passing into the cells of the lungs, and out of them, produces sounds, varied according to the different conditions of the lungs. If no sound is emitted, then, of course, no air enters or departs. If, therefore, on placing the ear flat upon, and close to, every portion of the chest, any part emits no sound, then that part is badly compressed or really disorganized. Very commonly, mechanical derangement and disorganization exist together. We have nothing now to do with the disorganized state, but to counteract a mechanical derangement, and restore and confirm respiration by cultivation.

What is now the condition of the lungs? We see that two general derangements prevail—obstructed circulation of air, and obstructed circulation of blood, by compression, as before shown. Of course, these are the two points in pathology and therapeutics which demand our attention. What, then, do we want? We want the cells, the arteries, and veins re-opened. This can be done only by the expansion of the chest and lungs. How shall this be effected? By internal and constitutional remedies, or by mechanical means? Evidently by the latter, as medicine can produce no effect upon the form, or remedy physical defects. First, the abdomen must be elevated by a *Lace*, judiciously, so as to *lift* the superincumbent mass upward and backward. By this means the lungs will be supported, the chest enlarged at its lower region, and the tightness and stricture removed. The patient can then stand erect, or place himself in any required position without the usual pain and stricture in the breast and stomach, and the diaphragm is also elevated and made tense, inducing it to contract more perfectly in respiration.

In the second place, he is to commence the practice of calisthenic exercises, which will be highly efficient in habituating him to the erect posture, developing a full chest and an expanded lung—placing the walls of the chest in such a position as to allow of perfect expansion.

Calisthenic Exercises.—For the benefit of those who have paid no attention to these exercises, I will specify a few.

1. Let the patient after being supported assume the erect posture. Let the body be fixed, and not yield to the motion of the arms, but act as the pivot in all cases. Draw up the arms as if about to strike some person in the stomach, the head and body being perfectly erect; then push the clenched fist forward, with what might you have, throwing back the body. Next draw back the elbows suddenly and forcibly, as far as possible, keeping them near the side, in the meantime bringing the body forward. Do this with a force increasing with the power of endurance.

2. Keep the same erect posture and bend the arms inward,

so as to bring the hands into the arm pits: then throw them down by the side violently, inclining the hands more to the back part of the body than to the front; at the same time elevating the head and shoulders. This straightens the spine; strengthens the muscles of the back and shoulders, and brings the body into habitual erectitude.

3. Place the palm of the hands upon the shoulders, and then throw them forcibly out and back; this gives lateral expansion to the chest.

4. Bring the back of the hands to the shoulders, the palms being turned forward, standing perpendicularly. Then throw them forward and bring them back with violence, always preserving this perpendicular position. This will serve to expand the chest, and throw back the shoulders.

5. *Of Respiratory Exercises.*—The patient is to cultivate the functions of respiration, by practising breathing exercises, at least three times a day at stated hours. Let the length of the lesson be according to the strength of the patient, increasing as fast as is possible.

Before I proceed to detail the process and rules, let me say a word respecting the propriety and importance of these exercises, and of cultivating respiration.

We see that breathing is the first act performed after birth, and the last at death. We see, also, that every other sensible function is augmented by its cultivation, and that its full development is secured and perpetuated by this cultivation, as is the case with every physical function and organ of the body. Certainly then, this function, upon which life and death is depending, should not be neglected.

All the surrounding impediments are now removed, and the combined mechanical relations are correct—all the deficiency is in the internal substance and arrangement of the lungs. What we now want is, to re-open the closed cells and re-expand the whole lung; thus, also, enlarging the calibre of the arteries and veins, and securing a perfect inspiration, and healthful circulation.

We now proceed to show how this may be effected. Take the barrel of a quill and make a small aperture in its little end; take the large end in the mouth, and closing the mouth, and the nostrils, inhale as much air as possible; then exhale it through the quill, taking care to suffer none to escape through the lips and nostrils, or use some of the new and improved inhaling tubes.

This latter is to be done through the agency of the abdominal muscles, as you will see in all buglers, and as may be noticed by placing the hand upon the abdomen when you blow against your other hand. This, in the first place, ex-

pands all the cells that are open or not entirely closed, and of course purifies the blood in the same ratio.

It also expands the arteries, especially the capillary vessels, thus facilitating the mechanism of circulation. While your lungs are inflated, commence percussion on the chest over all its parts. If there be soreness, then be gentle at first, and increase as you can bear it, and rest assured that in a few days you will be able to pound yourself with much violence, without pain. This agitates the air in the lungs, gently insinuating it into cells nearly, or quite shut, until all, or nearly all, are opened, and their proper functions restored. By this means, also, the pulmonary circulation is again re-established: the blood flowing freely in and out of the lungs. Now all this is done on the simplest and most common principle in nature. We know that the natural exercise of any, or all the organs, affords the most efficient stimulus to growth and power of function, as in case of the legs of the dancer, or the arms of the blacksmith. Again, we know that concussion calls out the powers of life and exalts their action in a general or local manner. This we have found true, when our feet, hands, or ears are nearly frozen. Although we may be far from fire, yet if we stamp violently for a time, the blood re-enters the vessels, and warmth re-visits the feet; the same is true of the hands and ears when subjected to friction.

This seems to be accomplished under the action of this law, viz., that exercise, friction, or concussion, *shall* excite the vital force, and call or invite an augmented amount of it to the seat of its action, thus restoring its diminished functions. So in the case in hand; the percussion agitates the lungs, and the vital force in them is exalted. Of this the patient is soon satisfied, feeling a sense of heat pervading the chest, and also an increased glow and action. By this action the absorbents are stimulated to absorb the lymph, whereby the cells are cleared, and if solid matter in the lungs ever can be absorbed (I mean morbid matter), that process will be thus facilitated in nature's own way. Now, why may we not plead the advantage of this action on disease of the *lungs*, since all admit its potency and efficiency in every other tissue?

I am not yet prepared to fully endorse *all* that Dr. Ramadge and his coadjutors say relative to the cure of extensive tubercular disease of the lungs by the above or analogous physical means. But I do *know* that the results have been *astonishing* in many supposed organic affections of them.

Let the reader now call to mind the substance of the past remarks in all its associations and bearings, and especially remember what constitutes genuine *consumption*, and all that is implied by it; and next, what is requisite, or indicated, in the cure of that disease as developed by us. We will now pass on

to report, faithfully, cases of the application of the above principles and practice.

We here admit that there is much to be said relative to the regulation of the *non-naturals*, and of constitutional treatment to be attended to in conjunction with the physical means as above.

But as it is not the genius or object of this work to give a general treatise on disease, but to speak principally of the physical means ordinarily not *much* thought of, we shall leave the other part of the treatment to be carried on according to old and established practice. But before we proceed to the detailing of cases, we will give expression to some views, which are contrary to *general practice*, at least, if not to teaching and theory.

First, With reference to air. When you have even the *most* reason to apprehend the presence or approach of *real* disease of the lungs (or imaginary either), allow not yourself to be shut up in the house for fear of taking cold, and to avoid exciting causes. It is the worst thing you *can* do, to shun the cold, and render yourself unable to bear the opening of a door. Besides, you are now only dying for *want* of air, or oxygen, and that which is pure. Therefore keep in the free air, and take care in the fall not to give way to the cold days, but use them as hardeners for the wintery blast, having the body properly protected by a suitable amount of flannel.

Next, take care not to cover your mouth with a thick veil, or napkin; it makes the air impure, and enfeebles the lungs, excepting your lungs are very irritable and positive, then bad effects of the cold air ensue.

Next, *exercise* freely in the open air, and *pretend* to be well (but don't forget that you are not); be careful not to attempt a well man's work, but do according to your strength. But be *sure*, in doing this, to take the proper attitude, and keep it. In short, obey all the indications as above prescribed.

As to diet, you must exercise common sense and strict observation, and be dictated or governed by circumstances. Only this particular thing would I say:—Don't be afraid of nourishing diet, when it does not directly excite fever or pain; but let it be easy and not stimulating. In short, keep up, as far as is at *all* practicable, the well man's proper habits.

As to fever, inflammation, sweats, chills, and other inconvenient accompaniments, let them be treated as is found best to treat them in the wisdom of the profession, but don't lay by, meantime, the great physical remedies above described. And lastly, we say, give up being your own physician, or managing your own case. You cannot do it; it requires experience and *general* science to manage *little things* to advantage, and make all work to one point in harmony. But select the man

who is humble and knowing enough to be satisfied with rational treatment (however simple), as indicated by the laws of nature.

CASE 1. Miss I.—, of Pittsburg, aged 18, returned from the south with almost every indication of seated pulmonary disease. She scarcely passed a day without more or less hæmoptysis, or bleeding from the lungs; respiration was very labored and short; had much pain in the breast, particularly a “sense of tightness,” or stricture in its centre, as if breathing through a gauze or sieve. Palpitation of the heart was excessive and constant, accompanied by an intolerable pain in its region. Her physician, Dr. G., a most intelligent practitioner, felt quite sure that there was some organic derangement in the heart (probably of its valves). Her countenance was of a waxen hue, that made all who knew the *pretty* girl, feel that she was fast falling into the grave. In connection with the above symptoms, she was unable to sit or stand erect, had great pain in the back, and a sense of continual agony, which made her very miserable. At the stomach she felt a most ghastly sense of sinking and vacancy, which, with the pain in the breast, was aggravated by the erect posture, and by throwing back the shoulders, for the reasons laid down in the preceding pages. And let it be distinctly understood, that the abdominal muscles were exceedingly relaxed, giving her the form of figure 4. She also was afflicted with prolapsus uteri, with all its connected and reflected influences on the brain, spine, limbs, &c., which we will not describe until we give our treatment of those complaints. At this juncture, I came to the city where she resided, to lay before its medical faculty my first paper on the physiology of the abdominal muscles, and the application of abdominal support to diseases of the chest, caused by general visceral descent, or retraction of the muscles of the abdomen. This paper was laid before a meeting of them, and a committee, consisting of Drs. Gazzem, Spear, and McDowell, was appointed to investigate and report at an adjourned meeting. Previous to this report, at the suggestion of Dr. Gazzem, the *lace* was tried upon Miss I., as being a case that would test the principles laid down in my paper. The instrument was a bad one, and besides being very imperfect, it did not fit, being much too large. Nevertheless, she said immediately, that the pain in the back was relieved, and that she could sit erect; that the deathly feeling at the stomach was gone; that she could breathe freely, and that she, in short, felt relief in body and mind. Especially that drawing sensation in the centre of the breast was removed.

We left her for four days to construct a *lace* better adapted to her case. On the afternoon of the fourth day, we went to make the second application, and found her absent on a visit

It is proper to remark here, that previously, the gentle motion of the carriage would cause great distress in the stomach, and generally produce fainting, or a strong tendency to it. We returned again in the evening, and found her gay and cheerful; she had not raised one drop of blood since the application of the lace.

She had borne the ride with benefit, and inquired how soon she might *waltz*. The change was great, and the fame of it spread through the city. In about two weeks I was invited to pay her a visit, when I found her able to entertain company. She was a new creature, and said that all was owing to the lace. She is now as well as others. She has an occasional bleeding from the lungs, but very trifling, and is able to participate in most youthful enjoyments.

This case proves, *first*, that the lungs are dependent on the integrity of the abdominal muscles, and *second*, that an elevating application to the latter does relieve the effects referred to.

CASE 2. Mrs. S——, Philadelphia, came to consult me in November of 1842. She had been for years supposed to be laboring under pulmonary disease, and was treated for the same in the usual manner. She was emaciated and feeble; had a severe and constant cough, with pain in the chest, especially on assuming the erect posture, or attempting a full inspiration. On directing her to make a full inspiration, she succeeded so poorly that at first I knew not that she had made the attempt, but found that she could not inhale over twelve cubic inches of air, and that the lower ribs were not inflated; nor did the lower ribs rise or fall in respiration. The heart was in a constant state of excitement, and the head was affected with all the symptoms of a nervous patient. The form was drooping and bent forward; chest compressed; the stomach retracted; the lower belly large and hard while in a standing posture, but exceedingly soft and flabby in the recumbent. She complained of great weakness of the back; of a sense of bearing down and dragging in the groins; a weakness and pain in the limbs, and numbness, and in short, of everything which you might expect from such a patient. She could walk but a few rods without great fatigue and loss of breath, accompanied with violent palpitation of the heart. I became much alarmed for her lungs, and had her assume the recumbent posture, making the chest bare, to institute an examination of them by auscultation and percussion. To my astonishment, I found that on placing my ear to the chest, and directing her to inspire fully, she made a full inspiration, expanding every cell, and the whole chest; indeed I could distinctly hear the air murmuring through the entire lung (not so healthily in some parts as in others to be sure). I inquired the meaning of it. "O!" said she, "I always breathe easy in this posture." "And why

don't you when sitting or standing?" said I. "Because it hurts so in my stomach that I can't," was her reply. This you, of course, see was evidence that the daily difficulty did not proceed from organic disease, but from a bad mechanical arrangement.

This case proves *many* things, and renders much of our previous argument practical and true, and you are prepared to see that the *Lace* was indicated as a remedy, which was applied. She arose, and looked astonished, drew a long breath, and said, "There, I can breathe now! the dragging at my stomach is gone, the tightness in my breast is gone, the pain in my back and lower part of my body is gone, and I feel like a new creature."

In this case there was an evident tendency to hepatization and consolidation of the lung, from the continual compression, and want of alternate expansion and contraction.

This was indicated both by the sounds emitted on percussion, and by the tenderness on pressure. I directed her to beat the chest, especially its sore region, with the open hand, on full inspiration. This at first she could hardly do at all, but soon found great pleasure in daily percussing the whole chest with great force. The tenderness *all* subsided, the shortness of breath and palpitation all left, and universal or general strength was the result. In about three weeks I called upon her, and found that she had walked about three miles that morning.

CASE 3. Miss M ——, of Philadelphia, a milliner, aged 19, consulted me for an affection of her lungs, of three years' standing. She stated that she had medicated much. Her form was exactly that of Fig. 4, which I need not describe. She suffered much pain in the breast, and accompanied with tightness, shortness of breath, a lividness of the countenance, and wheezing in breathing. She complained much of pain in the right side, of a heavy, dead nature, with weakness and sinking at the stomach; her back pained her much, and was very weak—had a sense of weight and bearing down at the base of the abdomen, on the *pubes*, or prominence below, with dragging in the groins. Her limbs were very weak, painful and numb; often afflicted with pricking sensations, and she sometimes felt great and sharp pain in the hip on moving it. Leucorrhœa, or whites, were wasting her away. While in the recumbent posture, she breathed freely, but not at all so in the sitting or standing posture. Palpitation of the heart was continued. This lady had a *lace* adjusted, and was immediately relieved of every sensible difficulty, which her *countenance*, as well as her tongue, showed; and in the space of three weeks, the *constipation* and leucorrhœa, as well as the other diseases, were entirely relieved.

The last two patients I heard from some five months after, and learned that they were well and happy. Percussion, and the other directions as laid down above were practised effectually, and promised to be of peculiar and decided efficacy in these cases.

CASE 4. Mrs. H——. This lady had, for three years, been afflicted by a severe, dry and continual cough, which was aggravated on speaking the shortest sentence, or taking the least exercise. She had much pain in the breast, and shortness of breath. The pain and tenderness in the right side was great, and every symptom of dyspepsy was severe. The form was that of a broken down person, like fig. 4, drooped, with contracted stomach, and abdomen flabby and large at the base. Of course she had most distressing *prolapsus and leucorrhœa*, with pain in the back and weakness of the limbs. The head also showed great manifestations of disturbance, was continually dizzy, with roaring or sounding within it—confusion of thought, and loss of memory. The most *horrible* gloom overspread her, so that she seldom went to the table, because she could not refrain from crying. Everything seemed to her like a horror of great darkness. The physicians decided that her complaint was very complicated, partaking of a pulmonary, hepatic, and dropsical nature, and had given her the most efficient practice by powerful medicines and counter irritation.

But I cannot better close the description, treatment and termination of her case, than to use her own language in the following letter, sent to me while in New Haven, which I give below:—

“Middletown, Ct., March, 1843.

“ DR. E. P. BANNING,

“ DEAR SIR,—When I called on you to consult you about my health, my lungs were in so bad a state that I could scarcely speak a word without the most violent coughing. Everything I attempted was done with extreme restlessness and reluctance, and the little duties which my family required were a great burden to me.

“ My religious enjoyments, and almost my confidence in God, were lost (at least it seemed so to me). Indeed I felt that I was fast going down to the grave, and that, unless I soon found relief, my days would soon be numbered. In this juncture I applied to you for counsel, and immediately, on the application of your *lace*, even on the same day, my relief was so great, that my friends wondered at the change that had come over me, and wanted to know what had happened. My husband said that my smiles and improved looks, even for the first day, had abundantly repaid him for the expense of the *lace*.

“ Indeed all my symptoms, so distressing and painful—inde-

scribably so, and known only by my own unhappy experience, were gone! vanished! and as though they had not been.

"I feel that I cannot be sufficiently thankful, that at this critical juncture with me, it pleased Almighty God to so order it, that Dr. Banuing should visit Middletown. I can scarcely realize that my attendance on your lectures, so much against my will, at the earnest entreaties of my husband, has resulted so unexpectedly in most happy consequences. I shall ever pray that your life and health may long be spared, to go on relieving many helpless, sick and afflicted, as you have me, and be the means of great good to your race."

CASE 5. Mr. Fuller, aged 19, of Middlebury, Vt., had for years bent forward and drooped his shoulders. He had a dry cough, his chest was much contracted in every part, especially in its lower dimensions, the breast bone being actually turned inward. The stomach was very much retracted and tender; his lower abdomen tumid and hard; his back and limbs were very weak; his respiration was short and painful, producing no expansion of the lower chest, especially so of the left side, which was very tender. He felt a sense of tightness and pulling from the top and centre of his breast, down below his stomach, and his bowels were very constipated. On percussing the chest, no sound was emitted from the left side, and on auscultating, or listening, no air was heard murmururing through the cells, except at the superior extremity of the lungs. Every variety of treatment had been in vain. The faith of his friends was very great; accordingly the *lace* was applied, as you will see (of course) that it was indicated. Immediately he straightened up, and breathed freely, comparatively; the tightness in the breast was *gone*; the sinking in the region of the stomach vanished, as it was filled by the elevation of the organs below, by means of the front pad; the cough soon ceased, and the back was relieved by the pads on each side of the spine. His strength and spirits improved immediately, and his countenance became cheerful. Next, he set about practising a set of calisthenic exercises, which were very efficient in restoring his general energy and proper attitude of body. Next, he was vigorous in regularly percussing the chest in all its parts, at the first but gently, with the open palm (and but very gently too), but soon with great violence. The issue was, that the tenderness vanished. Next, he set up the respiratory exercises, as above laid down, and soon the lower lungs were well inflated, the ribs and abdomen well expanded, and in short, he was renovated throughout by the more healthy arrangement of the organs, and the purification of the blood.

So numerous are the cases of radical and astonishing cure, that I know not where to stop, but I will content myself with giving a few more, intending by them to illustrate special points.

The following, in connection with the above, will show the efficacy of percussion in pectoral (or chest) affections.

CASE 6 Miss B———, Springfield, Vt., had for years been declining with consumption, as was supposed. Her strength and vivacity gradually went, a cough came on and increased, more and more. Her chest was weak, and pain wandering through it, respiration was very short and laborious, and voice weak and tremulous. Her form was precisely that of Fig. 4. She complained much of weakness and sinking at the stomach, and pain in the back. Dreadful gloom overspread her, and she saw herself sinking into the grave with a steady pace. The matter had been thus settled for months by herself and friends, and her pastor (who was in the same state), in his visits, spent the interview in contemplating the realities of another world, and considerations drawn from the approaching change. The lace was applied to this lady, and no other remedy. On the same day she breathed easier, felt relief from the pain and from the weakness of the stomach and back; her spirits were also relieved, as though an actual weight had been removed from her soul. The cough began to subside, and in two weeks she rode and walked out, and could sing again. In a word, she told me, not long afterward, that she was almost entirely relieved of every unpleaaant feeling, and that her strength was being fast restored. She had faithfully employed the physicians and their remedies, but did not receive even temporary relief. Some six months after, she sent me a circular certifying to her great and permanent relief to all her former ills.

CASE 7. Mr. B., aged 50, of Connecticut, was seized with a severe pleuritic attack, which was badly treated, and neglected, until it terminated in an almost universal adhesion of the left lung to the ribs, so that the left ribs did not expand in inspiration, nor *could he make* a full inspiration. By a faithful application of percussion, he was soon relieved of the tightness and shortness of breath, to a very great extent.

The following is illustrative of the power of the lace in shortness of breath, when there are any of the derangements referred to in the previous pages. We shall let this case suffice, though we have scores of them that are perfectly to the point.

CASE 8. Miss C., Penn., aged 45, had been for years supposed to be in a confirmed consumption. Her form was the worst I ever saw. Her shoulders were perfectly rounded; her chest contracted and retracted; the region of the stomach was entirely sunken in, so that one might lay their hand in the retraction; her respiration was continually laborious and wheezing, and her body bowed forward, so that she never sat or stood erect. Says she to me one day, in her honest, native bluntness, "I wonder, Doctor, if you have anything that will do

such good-for-nothing creatures as I am any good." I then examined her case, thinking her a poor subject, but was much struck with the extreme degree of the morbid form, which the fourth figure represents. The lace was applied; she arose and then sat down, silently for a moment (but erect), evidently absorbed in surprise; at length she arose again to her feet, and walked erect, and said, "Well, I declare for it, if I don't breathe clear from the bottom;" (i. e.) she had previously respired only with the upper lobes, and that with labor; but now she felt a liberal and full expansion of the *whole* chest and abdomen in inspiration. Suffice to say, that her health and comfort were immediately very much enhanced.

Finally: on this point we close, only having shown by what we *have* said, that something *may* be said and practised, to the immense advantage of the world, and that our advice certainly does not harm any one, nor interfere with any other treatment you may desire to practice.

Palpitation of the Heart.—What is the pathology of this disease, when not organic, cannot fail to be understood. It is simply this, viz., that the heart has lost the proper support of the diaphragm, by reason of its partial inversion, through a relaxation of the abdominal muscles, or even from spinal irritation. In either case, the treatment is obvious. Should the case be an *inflammatory* affection of the spine (which can be ascertained by smart pressure on the spinal column), the usual routine of treatment, as laid down by the best writers on this subject, should be resorted to; but care should be taken not to depend too long on that treatment, should it not prove effectual soon; or should it give *relief*, and still the relief not be radical. The partial relief is not always evidence that the prosecution of the first treatment is advisable, as it may have accomplished all that it could accomplish by relieving the acute and aggravating symptoms. The remaining effects may be chronic, and depend on spinal or muscular *weakness*, but not on spinal *irritation*, requiring support by the lace. Thus it will be seen that in *all* inorganic palpitation, the indications make it necessary to support the body by elevating the abdomen. Therefore, should it be evident that there is abdominal or *spinal* relaxation, in either case it will be expedient and necessary to apply the *lace* to elevate the diaphragm; for either of the two causes above referred to will produce the displacement, and induce the irritation of the heart's nerves of organic life, or its sympathetic nerves, and bring about the irregular action.

Furthermore, even when the palpitation is attended or caused by organic derangements, if there be any sign of deficient support, as indicated by the form of figure 4, or by the sensations complained of, if they be such as have been previously

delineated, or by spinal irritation or weakness, the lace will be of great service in removing aggravating circumstances, and restoring the normal or natural relations of the whole trunk.

We therefore remark, let none say that they are incurable, or that they have done their whole duty as patient or physician, until they have tested the influence of the *lace*. We have no cases of palpitation, entire, or isolated from other affections; but have many severe ones, where the palpitation was the primary disease or prominent feature in the case. For these I refer to the cases just related, and could to others; but let it suffice to remark, that whether primary or not, the lace has *always* afforded entire or very great relief to this, and generally to the symptoms also. We will refer, as an illustration, to

CASE 1. Miss J., of Pittsburgh, Pa. In her case, *one* of the most distressing symptoms was, a continual palpitation, aggravated by the slightest exercise or excitement of body or mind. In addition to the palpitation, there was a most distressing and constant aching or pain in the heart. The character and extent of her cardiac affections led her practitioner to fear an ossification of the valves, or some other organic derangement, producing a mechanical interruption of the sensible functions of the heart.

In this case, the application of the *lace* produced immediate relief to the palpitation and some relief to the pain. But shortly, the relief to the palpitation was almost perfect, and to the pain very great, if not finally entire.

Her physician believed that hers was the most extensive and marked case of symptomatic or indirect affection of the heart, imitating a radical and organic affection, he had ever seen; and this was made evident by the relief obtained through the lace. We would now refer to

CASE 2. In this case, palpitation extended almost to suffocation, imitating a wild tumult within the chest, that threatened to subvert the native and necessary peace and tranquillity of the empire within. This feature of her case withstood the indulgence of *any* excessive excitement of body or mind. But the extent and rapidity of the relief procured to this affection by the *lace* was surprising, not only to the patient and myself, but to all the neighborhood. In short, it was entire and complete.

CASE 3. Miss C., Mass., aged 22, had for years been so afflicted with palpitation of the heart (having some irritation of the spine), that a moderate walk along the road, and always the ascent of a flight of stairs, would induce a paroxysm, amounting to a fit, of *angina pectoris* (a certain spasmodic affection of the heart). She would be prostrated, and agonizingly and violently agitated. Indeed, she was in constant apprehension of death from these attacks. Every variety and extent of hospital and private treatment for spinal irritation had been

tried for her relief, with entire ill success. But on the simple application of the lace, in one moment she was relieved, so as to traverse the city, and ascend and descend long flights of stairs, with impunity— without having her *breathing spells*, as she called them. In short, she returned to her accustomed employment in the factory in about five days after the application of her lace.

But it is of no use to repeat or multiply cases on this head. I might adduce a multitude of them, of a very marked kind, too, and all successfully treated. Indeed, when I see so many taking every variety and any amount of anti-spasmodics or anodynes, to relieve this so common malady, and *that* without success, I long to show them “a more excellent way.”

Hysteria.—This protean malady has defied the profession, and, indeed, the whole world, to do more for it, than to partially prevent it by avoiding the more obvious circumstances that lead to the recurrence of the paroxysms, and to relieve the paroxysms by the usual anodyne and anti-spasmodic remedies. What I mean by hysteria, is that state of the constitution where there is an excited or depressed state of the nervous, and of even all the other systems in the human body, predisposing to what we call hysterical paroxysms. Of the constitutional treatment I shall say nothing, as I know of no improvements to suggest; and my only hope of being serviceable in my remarks, lies in speaking of this disease as caused and perpetuated by certain mechanical relations, such as have been delineated in the preceding parts of this work. I design to be very brief on the subject, as but a word or two are necessary in addition to the past exposition. The truth is (and experience has proved it), that the constitutions predisposed to *nervousness*, or hysteria, are all of them of the form of figure 4, where there is a perfect change of relation in all the trinical organs, from the throat to the pelvis. Thus the whole system of nerves is depressed, or excited, in several ways. *First*, the organs cease to support each other, and a mutual dragging is produced, thus destroying their tone by the disarrangement, and the loss of the tonic influence of pressure from one to the other, through the medium of the abdominal muscles. From this cause, some of the nerves are compressed, some dragged upon, and some irritated, merely because the surrounding relations are changed toward them.

This is exemplified by our exposition of the cause of pains, and loss of motion in the limbs; the bearing down; the dragging in the groins, and terrible pains and weakness in the back; the sinking and ghastly feeling in the stomach, and torpor of that organ; the palpitation of the heart, and the consequent brain affections from compression on the nerves, inducing giddiness and dimness of sight, morbid excitement and de-

pression, and all the other phenomena of hysteria and hypochondria. We shall first speak of the treatment of hysteria in its common acceptation, as applied to females.

The treatment, of course, will be simply to replace the bowels in their proper bearings, and retain them there. This cannot be done so well in any way, as by the judicious application of the *lace*, used according to the directions given for its use in this work. Secondly, let the patient obey the laws of nature in her exercises and diet, &c., &c. My experience has been so wonderful in this matter, that I shall content myself by simply stating a few cases, as an exact illustration of *hundreds* of others, and then leave the subject.

CASE 1. Mrs. A., of Pennsylvania (married), was in the spring house, and, upon moderately exerting herself, she became frantic—hurled the vessels of milk out of door, and jumped into the spring. Her husband carried her into the house, and Dr. H. was immediately sent for. On arriving, he could think of nothing that could cause such a strange and sudden movement. She was still frantic. He however recollects the extent of uterine sympathy, and made an examination *per vaginam*, and found the *uterus* moderately descended; he accordingly replaced it, and in one moment she was calm and perfectly restored.

This case shows not the use of the *lace* directly; but it does show the influence of uterine displacement in deranging extensively the functions of the brain, and of *every other organ*.

CASE 2. Mrs. B., of Crawford Co., Penn. (married), was the continual subject of every variety and degree of nervous derangement. She was fearful, tremulous and sympathetic in the extreme. Her mind, though of native strength, was irritable and capricious; she would complain of sudden fits of indisposition to move, with perfect confusion of mind, and of the sense of seeing, hearing, &c.; but especially, was gloom and apprehension a predominant trouble and besetment, that disturbed her own comfort and that of her family. This state was of years' standing, and grew worse. She made application for the *lace*, and from that day she was a new being in body and mind. She now enjoys life well, and is restored to her former pleasantness of temper and disposition. An attempt to leave off the *lace* has always, shortly after, been followed by the old difficulties. She also *protests* that she would not do without it for the world.

I might go on to enumerate a host of cases in point, but it is unnecessary, as all of the cases which have preceded, and which follow, are, in part, of the same stamp. I shall, therefore, make but one single remark, viz.:—That in *every* case of permanent predisposition to hysteria, you will find more or less of the shape, or state, referred to in the former part of the

work, and it will be associated with most of the other maladies which result from that state of the parts. I also believe, that millions are now laboring under a set of chronic diseases, which are christened with names they do not deserve, but are merely a set of *effects* of one common cause, all requiring the same treatment, and that treatment is, support to the abdominal viscera.

Hypochondria.—This terrible malady has, of all diseases, been least understood, and most unsuccessfully treated. The *term*, at least, is an indefinite one in its application throughout the world, and very opposite states of the system have been implied by it. So protean is this disease, that I shall not pretend to give a definition of it, but specify below a few of the symptoms as indications of (as I *view* the matter) the manner of treatment to be pursued.

The manner of the approach, and the phenomena, are so varied and multiplied, that I can only point out its *existence*, but cannot definitely define it. The symptoms I shall divide into corporeal and mental, or those affecting (or appearing to affect) the body, and those that affect the mind. But for the benefit of unlearned readers, I here say, that hypochondria is that state of the system which is denominated *hipo*, *hip*, *lopo*, &c., &c. Notwithstanding the endless variety of appearances, peculiarities and degrees of this malady, there are certain *general* characteristics that usually accompany it (a part, or all of them). Most generally they complain of some kind of bodily aberration (but not always), and we proceed to speak of a few of them.

First, as to who the subjects are. In general, they are men who have been actively engaged in life—conspicuously so within their sphere, either as agriculturists, commercialists, or literary men; but more seldom are they found among the first of the three. The *subject* generally becomes taciturn and gloomy—begins to complain of pain or unusual feelings in some one or more of the organs. The liver is usually the organ pitched upon as the subject of disease. These complaints are not of a violent, or organic nature; but of a functional, or supposed to be. Torpor is the general complaint, or else a tendency to the bilious; constipation usually attends; and often the piles, exhibited in its varied shades and degrees, commonly occupy a portion of the patient's thoughts and anxieties. Or, the lungs may set in for a share, there being some cough: pain or uneasiness about the breast, usually attended by palpitation of the heart. The patient becomes retired, and takes *most* comfort in tormenting others about his infirmities. These, among others, *may be real*.

Secondly, of the mental indications, or phenomena of the disease. These may be called (to others will appear to be) illusions, or

hallucinations. They have one grand division, viz., those referring to the body, or temporal things, and those referring to eternal things. They will come to the most unaccountable conclusions in nature. In the midst of wealth and prosperity, they begin to conclude they are, or soon will be, perfectly poor. With reference to social relations, they strangely conclude, even amidst love and every endearment, that they are hateful and hated, justly or unjustly. Often they conceive the most fantastic notions of their forms, looks, or state, corporeally. Some imagine that they *will* soon swell so as to overset the house, or that they are turned into a *tea-pot*, or some animal. Often they are in apprehension of mortifying, or suffering an endless variety of things. And all this time they will appear to be perfectly rational on every other topic. But be the patient's view of himself what it may, one thing you may uniformly expect, viz., that he will look on the unfortunate side of the question, and be most pertinacious in his belief. He often begins to feel that he is too mean to live, and that the sight of an honest man would kill him; that he has committed some horrid crime (though he cannot specify it), for which he ought to die. But the more common and disastrous cause of taciturnity and reserve, gloom and shyness, proceeds from a source that is not often guessed at, or remedied when known. I refer to an unfortunate turn of thought on his religious state, and immortal destiny. My experience has led me to know, that the troubles of the taciturn, gloomy, reserved and unhappy men, are generally misstated, and lie in some unveiled view of the subject of religion. And strange it is, but it is true, that they will almost never let you know it, unless you surprise them by hitting upon it unawares to them. It may be doubt, fear, perplexity, darkness, &c. But the two common states are—trouble respecting their decease, or the notion that they have committed the unpardonable sin. O! the horrors of that mind that entertains these thoughts. They curb the very wheels of life, and bring on *real* disease. They dry up the soul, and despair, fear, agony, and fierce, perpetual fires dwell in him, and *that*, both night and day. His countenance shows it—his eye, ah! his eye; look at it! See the glared vacant look! the indescribable sensitiveness and indifference combined, that tell of the discordant, agonized soul within, where *hell reigns*; a soul is devouring itself.

My own experience has been such, as to lead *me*, even *me*, so near to the borders of this pit, that I can conceive of the horror of those who are thus tormented. But my *professional* experience has been, for the last year, very full and strong on this point, so that I know more than I ever dreamed or guessed before.

Let me here tell the reader that I have had it from the lips of

the most pious, who have recovered from this state, that to prevent committing suicide has been their continual anxiety and prayer; that the temptation was constant and powerful. They have informed me also that nothing but a consciousness that they were *sane* and *accountable*, prevented their imbruining their hands in their own blood.

Dear reader, when you begin to dream of such things, I beg of you to be alarmed, and resist. It is the devil taking the advantage of your weakness, and ere you are aware, he will have whispered something to you which you little think of. I will now cut these remarks short, and proceed to speak of the causes which do or *may* produce this train or family of symptoms.

I will first remark, on this head, that they may be organic, in a set of organs or a single organ, perhaps defying the best *moral* or *physical* treatment—as new formations, inflammations, or softening of the brain, liver, &c. And secondly, I will remark, that it may *not* be these, but be the result of certain moral causes, or outward circumstances, influencing the mind or the body through it. Thirdly, it may be, and most generally is, the result of neither of the above, but of the morbid change in the combination of arrangement in the organs of the human trunk, as shown in the preceding pages of this work; it being the result of muscular relaxation.

Such has been the experience of the writer on this point, that he is led, *unequivocally*, to believe that a great proportion of the cases of *melancholia*, monomania, and partial insanity, owe their origin and progress to the same cause which has induced hysteria and the other difficulties treated of in this work.

While I write upon this point, my feelings yearn to enter the retreats and lunatic asylums, and select such patients as I *have seen there* incarcerated for years, and make application of the treatment indicated in perfect cases of muscular relaxation. But I ask the man who judges me to be fanatical, or too enthusiastic, to call to his mind the cases of melancholia and monomania with which he has been acquainted. Recollect their *forms*, their movements, and their countenances; let him contemplate what is considered in figures number 4, 6 and 8; the extensive and mutual mechanical and geographical displacements which must ensue, and the functional infringements which must result from deranging the relations, in all the most sensitive tissues of the whole body, and see if I am as enthusiastic as he who can see *no* analogy in the cases. My opinion is, that uniform coincidence between the morbid form and diseased state, is more than an *intimation* that there is some pathological connection between the two, which requires investigation. But I have facts that put opposing arguments

or inferences at defiance ; in which are involved the most satisfactory confirmations to the above hints, with the still more pleasing assurance that they are practical, and that, in this pathology, a ray of hope bursts upon those unhappy beings, who seem to be the sport of the wreck of mind.

I shall close my remarks on this point by detailing a few cases out of the many which serve to illustrate the true nature of the case, as well as to show my views upon this subject.

CASE 1. Deacon O., of Ct., came to consult me. He stated that for years he had felt a strange desire to put an end to himself; that his earthly and religious enjoyments were lost, and his hopes, almost; that he appeared to himself to be the meanest and vilest of men, and that 'twould kill him to meet the gaze of an honest, upright man, to avoid which he had often gone very far round, by a back way, shunning the glance of every one. He described his horror, and great, perpetual gloom, as being like a mighty press, that would almost press his soul out of him. He said that he sometimes was in hopes that he was so far insane as to make him irresponsible for his conduct, and thus he could have an excuse for gratifying his great propensity to commit suicide. But he said he knew that he was perfectly rational and accountable, and never lost sight of the fact that it was wrong, and that he would meet the just retribution of such an awful crime. His gloom and melancholy were dreadful, and every pleasant countenance only made his gloom the deeper.

He complained some of dyspepsy, and of course of a capricious appetite. His locomotive powers were much depreciated; his limbs were weak; his back also; his abdomen was pendulous, round and tender; stomach sunken and tender—very much so; could not bear to walk without holding himself up. His shoulders were drooped, and in short he was a perfect case of general displacement. He said that my description of his feelings and thoughts was true to the letter. The *lace* was applied, and he could immediately walk or ride with ease and benefit, and engage in business with satisfaction. In short, he seemed to be renewed in body and mind. He felt that he could not do enough to bring my views into general notice. It is just here to state, that no one ever knew or suspected Deacon O. ever was thus afflicted, or that he ever had the least thought of suicide, or suffered from mental depression.

CASE 2. Mr. ——, of Ct., aged 55, was the most terrible case of hypochondria I ever saw, of the depressed character. His friends first consulted me on his account, and laid a plan to get him in to see me. He finally came. He came in bowed forward, his shoulders depressed, his chest contracted, his stomach retracted and sunken, his abdomen *completely relaxed*.

and fallen down—hanging like a “sack of soft soap” on the bones below; indeed, he resembled a lady who was five months *enceinte*. He was continually holding up his abdomen with his hand, or feeling of his stomach. But the great complaint was that he had the *consumption*; he had little or no cough, and little or no pain, but complained of continual weakness in the breast, with shortness of breath, stricture, panting, and some palpitation of the heart.

His mind dwelt on nothing but his approaching dissolution, continually imagining that if he went into one room he never would come out again, or that he would certainly die if he went into the street. He would not change his clothes, nor even his linen, from month to month, on account of his *debility*, or fear of sinking under it. His friends were almost broken-hearted on account of his singular conduct. As soon as I saw him I was convinced that his lungs were sound and every other organ, and that he was merely laboring under the natural effects of a relaxation of the abdominal muscles. So great was his depression, and bodily and mental prostration, that he could not be prevailed upon to apply the lace, fearing (as he said) that he would “sink under it.” He said he had found that his hand seemed to “fit better” and more gently, and that he could graduate the pressure as he was able to bear it.

This case shows, not the power of the *lace*, in these cases, but the connection there is between the federal, or combined, mutual relations of the body, and these complaints, and also indicating the proper treatment to be pursued.

CASE 3. Capt. S., of Ct., aged 60, had been under the treatment of the best of the medical faculty in that State. He was naturally of stout, robust frame, but was now wasted away to a skeleton. He complained of continual pain in the stomach, which was so constant and severe that his doctors decided his case to be *cancer* of that organ. He also complained of a severe pain in his right hip, which disabled him from walking. But his mental difficulties were not a few. He was most heavily depressed in mind, roving round, night and day, like one bereft of reason. His eye was glassy and vacant, yet showing great anxiety and distress of soul, or rather a great void, which nothing could fill. He could not sit in one position long, or stay in any one place, or have his attendants absent a moment. He was in continual fear of *something*, yet at the same time had a strong propensity to make away with himself, which gave his friends much alarm. I will not pretend to give anything like a full description of his case and sufferings. I examined him in a mechanical point of view, and found him only the *wreck* of a man. Instead of having a tall, plump and manly form (which he originally had), he was drooped, humped and contracted in every dimension. His stomach was

peculiarly sunken and retracted, and he felt a sensation of tightness and pulling in that region, whenever he assumed the erect posture, accompanied by a sense of weakness and faintness in the breast, with palpitation. His lower belly was hard and tunid, resting heavily on the bones below; pressing on the nerves distributed about the hips, thus occasioning the pain and lameness there. He was also costive, and had some incontinence of the urine.

Although I had not thought of his being a subject for the lace, I was struck with the similarity between his form and that of dyspeptics and others who were decidedly benefited by it. On this account, the lace was carefully applied. He immediately laughed aloud, for the first time during the last nine weeks, and said, "that feels comfortable." Suffice it to say, he became better immediately; gained two pounds and a half in a week from that day; his mind became clear and his spirits lively; he could stay alone, could enjoy society, and be a source of satisfaction to others, being sociable and cheerful. His pain in his stomach and hip was relieved at once. In short, he was cured of all his maladies. His doctors, who had told me plainly that he had a *cancer* of the stomach, and that nothing could be done, were astonished, and owned that this was a triumph and a plain case.

The truth is, that the relaxation of the abdominal muscles was the legitimate cause of every difficulty. Especially see how plainly this accounts for the cancer of the stomach, and the pain in the hips.

CASE 4. Mr. R., of Ct., aged 50, a mechanic, had through life been very active, but for the last twelve years had been much indisposed, both in body and mind. He became gloomy, desponding, low-spirited and inert; had *dyspepsy*, *liver complaint*, *constipation of the bowels*, and, in short, everything that belongs to a combination of hypochondria and dyspepsy. He was soon deemed incapable of attending to his own affairs, and a guardian was placed over him. Sometimes it seemed that he would, for months, remain in some retired place, overwhelmed with gloom and horrid despondency, saying that he was damned and lost, even then experiencing the pangs of hell. At other times he would be excited for months, and could not be contented unless driving on business at least sixteen hours in every twenty-four. He seemed then to act as if the world would come to an end if he should cease to rush on headlong. His temptations to suicide were constant and dreadful; he often examined to see if he were insane, and always found that he was not, and that he was therefore accountable for all that he did. He said he spent most of his time in brooding over a "fearful looking for a day of judgment and fiery indignation."

But he informed me of one singular fact, viz., that through the whole series of twelve years (a part of which time he was confined in the Hartford Insane Retreat), he never neglected his closet and communion with *God*, although much of the time it seemed like mockery. No business could be transacted with him requiring any intellect or investigation, such was his irritability. He was brought to me for consultation. I could not see his form so morbidly indicative of displacement and relaxation as in the case of Mr. S. (Case 3), but somewhat so. However, the *lace* was applied, and in less than fifteen minutes he said that he was better, paid for his lace, and was a happy man. He became calm and cheerful, and in all respects like other men. His costive habits ceased in a day, though for years he had never had an alvine evacuation without cathartics. He immediately went about business, which had been neglected for years on his account, I have done very imperfect justice in the description to this case, and can only say, that half has not been told. I will close it by giving his letter below.

Middletown, Ct., Feb. 29, 1843.

DR. E. P. BANNING,

DEAR SIR,—You will recollect that I had worn your *lace* a few days when you left our town, and that I had spoken well of it; and now, sir, I am under very great obligations to you, seeing, that on wearing it a longer time, I am much disappointed, inasmuch as I have had business of the most intricate and perplexing nature to transact that could be in my line, ever since you left here; and to my *astonishment*, I have been able to pursue it with a clear mind, and go to rest at night *quietly*, and without much fatigue. I would also state that I have done all this without the aid of medicine; and I now begin to feel and realize, that after a most distressing illness of more than twelve years, my health will soon be entirely restored.

Yours truly,

Many are the cases which I might present here, but these and the above remarks are sufficient to establish the principles, and entitle the suggestions to earnest consideration, and this is all we ask.

Dyspepsy.—This term implies so much, and is so indefinite in its extent and meaning, that it is difficult to write under it understandingly and fully. I shall, however, consider it in its vague and extensive application as it is *generally* understood, viz: to mean indigestion, constipation, tenderness of the abdomen and stomach, heart and liver diseases, &c., &c.

In my description of it, I shall be very brief, being only anxious to impress the reader with correct notions as to its nature, cause and proper treatment.

The subject of it may have a part, or all, of the following

symptoms, and in either case, be said, under certain circumstances, to be afflicted with dyspepsy. Let it be also distinctly borne in mind, that patients may labor under either of these symptoms, even in an aggravated degree, from some peculiar cause, and *not* have dyspepsy, that is, not have that state of the organ that can properly be called dyspepsy, or indigestion, and require, or even admit, of the ordinary and appropriate treatment for that malady and state.

The patient may complain of loss of appetite, or changeable, and even voracious appetite. What is eaten sits heavily on the stomach, producing a sense of flatness, weight, or load, or else it will produce a burning sensation, or pain in the stomach, which is often insufferable, and which is accompanied with a belching of gas, or the throwing off of a hot acid fluid, that seems to melt the teeth, and skin the whole throat. Often, after eating, he feels as though there were a great, heavy and indigestible mass in the stomach, the painful effect of it only being relieved by lying prostrate.

He generally feels weak and ghastly at the stomach, it being tender on pressure. That region is smaller, retracted, and soft to the touch. The lower abdomen will be round, tumid and hard, or else the whole abdomen will be hard and retracted. Almost always he will most of the time be of constipated habits. He usually looks and stands like Fig. 4, bent forward, drooped, with small waist, sunken stomach, and inverted abdomen, that is, in its proportions ; he steps carefully, and holds his hands to his stomach, or abdomen, to prevent the shaking of the organs.

From the above imperfect sketch it is plain that, let the cause be what it may, the mechanical relations are deranged, and that there is a general infringement of the organs, and consequent interruption or derangement of their functions.

Reader, you now see the subject before you, you understand my views, and know what is the remedy. Can it be blue pills, tonics, anodynes, cathartics, or laxatives exclusively ? We say that it is neither ; but that it is only an effect of general mal-position, produced by a relaxation of the abdominal muscles, inducing *apparent* primary diseases in every organ of the abdomen. The question now is, what is the appropriate treatment, as indicated by mechanical physiology and *common sense*? The reply is one of great importance. Below I proceed to give this reply with great confidence, founding my treatment on reason, observation, and a host of facts, which, with me, weigh down all the fine-spun arguments which call for internal or constitutional treatment exclusively.

I believe that the proper treatment is physical or mechanical ; a treatment which replaces all the organs, restores all the normal relations, and gives the machine and its vital power a

fair chance to perform their specific functions. Secondly, it is to consist in a due and judicious attention to all the habits of the patient, and a proper regulation of the non-naturals. Thirdly, in a judicious co-operation with medicines.

This brings us directly to the treatment. First, then, of the physical treatment we remark : The organs are all deranged, or gravitated, one pulling and leaning upon the other. The *lace*, of strength suited to the extent of the derangement, and the sensitiveness of the patient, should be applied and accurately adjusted, so that it shall fit exactly, and feel comfortably.

The moment this is effected, the form of body is changed, the waist is enlarged by the ascent of the organs sustaining the diaphragm and lungs, and each successive set of organs sustaining the other throughout the whole trunk. Relief is Instantaneous to a certain extent. The patient now draws a full, refreshing breath, and says that the *goneness* is vanished, the back is relieved, the weight at the base of the belly removed ; he moves cheerfully, and without the fear of shaking ; all parts feel comfortable, because they are all compressed, each by each, and kept within their orbit. By this means, the stimulus or tonic influence of pressure is restored, whereby the insensible sensibility of *Bichat* is aroused (or the involuntary powers of life); the secretions are set up, the oscillating movement through the elliptic spring of the lace is restored, imitative of the abdominals when they are elastic ; thus, costiveness or constipation is removed, its cause being removed ; the stomach is now supported, and its nerves now sustain or are sustained by the original combination of surrounding relations. Of course, all the sensibilities and secretions are carried on, the stomach is sustained when empty as when full, the bile also is poured out into the *duodenum* (or second stomach), at a proper time, by the surrounding pressure. By all these means (everything respecting the habits being equal and right), the gastric juice is plentifully supplied, and of a good and active quality. Thus every part or stage of the process of digestion is carried on and completed. Or, to say the least, the groundwork of physiological action is right. But there may have been other causes acting in causing and keeping up the derangement which the morbid relations have instituted or perpetuated. First, the patient may have been in the swinish habit of daily surfeiting, whereby the stomach is over drawn upon ; or he may have habitually indulged in improper articles for aliment, or, at improper times, imposing thereby burdens that are not within the laws of physiology to perform.

Diet.—On the subject of diet I will simply say, that, first of all, he must make up his mind to be a *man*, and act up to what he knows, or might know, respecting proper articles of food, and their quantity, and the time of using them. Second-

ly, I say that his observation must make up the particular, and sometimes the general rules, as what suits one temperament or constitution, often does not suit another.'

I first recommend the leaving off of all *narcotics*, as *tea*, *coffee* and *tobacco*, and *opium* in every form of use. To do this, you may find yourself unequal at the first onset; but you *must do it*, and your repeated failures to accomplish it will prove its necessity. Secondly, I say that you should, in the main, select a vegetable diet. But I warn against *distending* the stomach with *anything*, or, in other words, warn rather against the *quantity* than the *quality*. Never eat of *anything*, however mild, until you can eat no more, or want no more; this would be to eat as long as the *swine* do. Next, I say, do not select a poor, impoverished diet; the stomach has to labor harder to get its pittance, than it would from a richer or more nutritious one. Therefore, let the diet, whether vegetable or animal, be such as is light, and will both sit and digest easy. In this manner the stomach has less to do, and is more likely to do it well, than when analysing a mess of *slops* to nourish the system.

For a vegetable diet, I like the Graham bread, or the rye and Indian, or the Indian alone. Milk often suits well; where it does, use it. Potatoes, baked or roasted, are good; onions, tomatoes, and all this class of vegetables are wholesome. Butter must be watched.

But I must say, that I approve of a mixed diet with flesh, say of mutton, or rare beef, when the stomach is *very* irritable, and when it receives and faithfully disposes of it. Mutton chop I consider to be the best dish of animal food. Baked meats are not good; much fat meat does not digest well.

Again, be regular and systematical in the number of meals per day, and the intervals between them. Three times per day are as often as you should eat, and take no lunch between meals. Let the breakfast be light, dinner the heaviest, and supper the lightest meal. *Never eat within three hours of going to rest:—better fast.*

Thirdly, of *rest or sleep*. On this point I shall only say, retire early, and rise early. Sleep on a mattress, and not on or under feathers.

Fourthly, of *exercise*. Upon this point *much should* be said, but it is not within the scope of this work to be prolix or voluminous on any point. I simply remark, that to be *active* in body and mind is all important and imperative, if you intend to be cured as well as relieved; for this is the great guaranty to energy, activity of fibre, and nervous influence.

The first exercise needed, is for the weak abdominal muscles, and the motion of the abdominal organs; thus restoring both the support and the movement of the organs. This can-

not be so well effected in any way, as by exercise *on* the body, rather than by the body operating on something else.

Mr. Halsted, of New York, established the most successful and rational treatment on this score that is extant. It consisted in laying the patient on his back, and kneading him violently some two or three times a day. Also, by placing the hands at the lower belly, and violently elevating and depressing them, so as to shake the whole abdominal furniture within. These two exercises are to be increased in violence by degrees, until you can pommel the abdomen with great force. In conjunction with the *lace* I have never known constipation, tenderness of the abdomen, or indigestion, that is, torpor of the stomach, to resist the influence of this violent exercise upon the abdomen; indeed, almost immediate relief is generally experienced. While on this head, I would speak favorably of stimulating baths, and the vigorous use of the flesh brush, or a crash towel.

As to general exercise, pertinent and important directions might be multiplied, but I shall be brief, only wishing to be distinctly understood, that activity is indispensable.

Walking.—This exercise, though very useful and important, does not answer the end proposed, especially as it is resorted to as a *remedy* by those of *sedentary* habits, as ministers, lawyers, or students, who have not the ordinary exercise for the muscles of the arms and trunk. This exercise only gives exercise to the legs, or *locomotives*, and but *very little* to the muscles of the trunk, the very place where it is especially requisite. It *fatigues* the limbs, often without providing energy.

Akin to this, is riding in a very easy carriage, where no exercise really is given, through the elastic movement of the springs. There is no jolting, concussion, or shaking; and the principal benefit derived from this sedentary exercise, is the change of scene and air, which is not inconsiderable. I therefore recommend walking to be practised, of course, and not to be omitted, but not to be relied on as sufficient. I must recommend horse, rather than *carriage* exercise; and let the horse have some movement not calculated to lull one to sleep; I prefer a trot to any other gait. The patient will, at first, experience pain, but will soon endure it with pleasure. But if he prefer exercise on wheels, select a lumber wagon, or one that has some jolting movement about it that makes the whole system shake. The advantage of this is obvious, and very great.

Calisthenic and Gymnastic Exercises.—Swinging by the hands from a rope, jumping the rope, sawing wood, chopping or threshing, all in moderation, are *excellent*, in lessons of one-half an hour's duration, increasing as you can bear it. But many may fear that we wish to urge the necessity of *work*,

and therefore demur against the above directions. To such I would say, that it matters not to me or you whether you *work* or *play*, so that the proper amount of exercise is enjoyed by every muscle or organ; and, to any who have a special repugnance to work, would recommend *calisthenic* and *gymnastic* exercises.

I can conceive of *no* excuse for the neglect of these exercises, as they (especially the former), are within the reach of *all*.

In a previous chapter I have given a few simple exercises in calisthenics, which I urge upon all to use with vigor, on retiring to, and rising from rest. I also impress upon every father the benefit that will accrue to his son by permitting him daily to practise in a gymnasium. These exercises give energy to every fibre, and great beauty, rotundity and symmetry to the body.

But let not the dyspeptic think to do up all his exercise at once, and then, by over-fatigue, frustrate the design through his indolence; but let him make up his mind to become a man of system and order in his exercise. In this way he will love it, and prevent by it a return of the disease, instead of barely obtaining relief. Indeed, let the dyspeptic know that he has entailed upon himself this malady by bad habits, among which (as a general rule), indolence, in some respect or other, and indulgence in appetite, stand pre-eminent, and that he must travel back the very way he has come, in the use of a proper quality and quantity of diet, partaken in a proper way, and at a proper time. Next he must know that he must reform in the kind of indolence he has indulged, and that it is the work of *time* and patience, for which *money* cannot stand as a substitute. Also, let such remember, that *no one* thing, however good, is to be depended on for the entire cure; but that the whole range of means, as indicated by the facts in each case, are to be patiently and judiciously employed.

We now proceed to detail, *faithfully*, a few of many cases of the different degrees and varieties of this malady. We shall do this honestly, and only with a view to establish a fact, and to bring that fact into use, to the incalculable advantage of the afflicted.

CASE 1. Mr. C., of Philadelphia, was brought up to the business of printing. From boyhood he was dyspeptic, so that the family were often disturbed at night with watching, for it seemed that his distress would destroy him. Near the age of twenty-one he left his vocation and went into other business, not that best calculated to restore him. I saw him when about the age of thirty, he having returned home, unable to attend to business. He was a mere wreck of a man; his flesh gone, his skin and extremities cold. His form was naturally straight, but now it was crooked; his shoulders humped

and drooped; his chest contracted; his stomach sunken and retracted, or *gone*, and his abdomen very soft and flat in its upper region, but hard and tumid at its base, as in Fig. 4. The tenderness, or sense of pulling or tightness, was severe at the stomach; the same was also the fact at the lower belly, accompanied with swelling. His constipation was surprising. He could not sit comfortably without lounging on the sofa. His stomach refused almost *everything*. But his more troublesome peculiarities were, the most intolerable gloom or melancholy. He felt a perfect aversion to *seeing*, much more to *conversing* with his friends, and his answers were monosyllables, and irritable at that. He was cross and perfectly misanthropic. He said that he had often put off *all important* business, because it was too great an undertaking to go up stairs for ink. But I cannot tell all his feelings and actions; he was anything and everything that a miserable dyspeptic could be. The piles were exceedingly tormenting to him also.

It would be almost impossible to enumerate the variety and amount of medical treatment he had received, but all to no purpose. He had become disgusted with the profession, and would not endure interrogatories from them concerning his complaints.

In this situation, the lace was applied. In one moment he looked up and said, "That *does* touch the spot." I directed him to wear it a few days on trial. But soon he left the city. In about one month he returned, looking and acting like a new man; his countenance was bright, his eye looked brilliant, and his manners were courteous and social. He passed evenings now cheerfully in the presence of the family. On first returning, he drew up his chair to me and said, "I have the pleasure of bearing testimony to the efficacy of your *lace*; I have shown it to several, and they were like to take it from me." His appetite was improved; his strength *much* increased; the tenderness of his stomach diminished, and the enlarged, tumid state of the lower abdomen nearly removed.

CASE 2. Mrs. T., Pennsylvania, married, aged forty, had been medicated eighteen months for dyspepsy. She was emaciated and relaxed beyond measure, and was tired of the profession, and of life also. Her form was that of Fig. 4, emphatically so. The chest was perfectly retracted and stomach very much depressed—said it was *gone*. On sitting up had a tendency to faint, from the "*pulling*" at the stomach; could eat but one or two articles, and that in the recumbent posture, for on eating erect, the *load* or weight was so distressing that she was compelled to take to the bed immediately, to be relieved. In this case the atrophy, or laxity of the abdominal fibres seemed to be extreme, so that I grasped a handful of the integuments with ease.

The lace was adjusted to this lady, and to my surprise, she arose, and, in the act of rising, exclaimed, "Why, my stomach is *filled up*." She walked to the fire, at first very crooked and cautious, as usual, as though she would fall to pieces, but soon stood erect; then sat and conversed cheerfully, for the space of three-quarters of an hour, which she informed me she had not done for five consecutive minutes, for six months, previously. Her appetite immediately improved, and she could eat ordinary food, in the erect posture, and sit up during its digestion. She soon went into the air, and rode out to some advantage. The dizziness of the head and gloom of spirits were dissipated, and as her husband said to me, they had "different times at their house" after that. The change in her actions and appearance was astonishing, and produced much affect on the mind of the community.

Very many are the cases whice I might bring forward in detail, but they are all similar in their description and success. Suffice it to say, that in *no* case has there been a failure. Nor do I believe there ever will be one, where there is no organic lesion, and where all the above remedial agents are judiciously used. I content myself with the relation of two more cases, and leave the reader to his own cogitations.

CASE 3. Mr. E., of New York city, a young man who gradually declined, and became horribly dyspeptic: when he called to see me he was afraid to look or to speak, he thought himself so worthless. He had no confidence in himself or his friends; no peace nor hope; all was black without and within; what he ate, he "watched to see if it went to the right place." Constipation, despite of medicine, reigned; from his head to his hips, he felt a sense of weight hanging or dragging, or pulling at the stomach, sides, faintness about the chest; his voice was very effeminate, and tremulous and hesitating. Said he wanted to die. Had done all that a distressed man could do, and to no avail. I examined his frame, and found his stomach sunken, abdomen pendulous and hard at its base. He was continually disposed to sit lounging on one hip, or doubled up to prevent a sense of bearing and vacancy at the stomach. The lace was applied. He felt better, and his voice was stronger before he left the room. In a few days he called, said his bowels were regular, *perfectly*, could eat like others, with impunity —had returned to his business. His countenance also told the change as plainly as his tongue.

CASE 4. Mr. M., a Swede, was returning to his country for his health, called to see me. His case was about exactly as the one above—all was gloom, and despair in his appearance; movedc arefully to prevent jolting; said he felt great weakness in his breast, sides, stomach and bowels; was *perfectly costive*; had no energy. I saw his form was like Figs. 4 and 8, with

the lower belly distended with flatus, sounded on snapping it with the finger. He applied the lace, and nothing else, felt comforted before he left the room, returned the next morning and was much changed, friends had inquired what was the matter, said three hours after he left, the bowels moved freely with much wind, from *that day* said no man could do more business than himself—energy returned, and cheerfulness of spirits.

Reader, I have not exaggerated, nor colored, nor even come up to the declarations of the patients themselves. But all cases of dyspepsia are not thus happily and suddenly benefited, in some it is more general; and in a very few cases—not benefited at all. The truth is, the lace should be tried by all, and seconded if necessary by constitutional and hygienic influences. We are here only pleading for a proper consideration of this principle among other things.

CHAPTER II.

AFFECTIONS OF THE LIVER—DYSENTERY AND CHRONIC DIARRHŒA—CHRONIC PERITONITIS, OR GENERAL TENDERNESS OF THE ABDOMEN—CONSTIPATION OF THE BOWELS—PILES OR HEMORRHOIDS—PAIN IN THE LEFT SIDE, OR CHRONIC INFLAMMATION OF THE SPLEEN—RETENTION AND TOO FREQUENT DISCHARGE OF URINE—AFFECTIONS OF THE SPINE—CASES SHOWING THE SUPERIORITY OF THE LACE OVER THE BRASS CORSETS—EFFECTS OF THE LACE ON WEAK CHILDREN—HABITUAL COLIC—INFLUENCE OF THE LACE DURING PREGNANCY—THE INFLUENCE OF THE LACE IN CHILD-BED—THE USE OF THE LACE IN UTERINE HEMORRHAGE AND PROFUSE MENSTRUATION—LEUCORRHŒA, OR WHITES—ŒDEMA, OR SWELLING OF THE LOWER EXTREMITIES—VARICOSE VEINS—OBESITY OR FATNESS—THE USE OF THE LACE ON SUBJECTS PRE-DISPOSED TO AND AFFLICTED BY HERNIA OR RUPTURES—PROLAP-SUS UTERI.

Affections of the Liver.—This term also is very indefinite, and is daily much abused, as it really expresses varieties of real diseases, and is often applied to states where it does not belong, and consequently much mischief is done by prescribing for a *liver affection*, when, probably, the morbid sensation and affections of the liver are but the reflected effects of remote causes, which are unsuspected. It may be said to cause dyspepsy, or

to be the effect of dyspepsy : or it *may* exist without any connection with it. My present object is only to touch on those cases where it is the result of, or accompanied by, disarrangement, or a descent of the lower organs, leaving the liver suspended, in lieu of being supported ; thus necessarily and very materially changing the relations and state of the liver, according to views presented in foregoing chapters of this work. Or, in other words, I wish to show, that not half the cases of supposed liver complaints are such in reality, but only a functional derangement, caused by general, mechanical and tangible infringement on the sensible, and consequently, on the *insensible* properties of that organ.

Should the above opinion be practically true, is there not a fearful amount of medication bestowed upon diseases that are *mechanical*, and not under the cognizance of medicine ? Is there not thus terrible injury done ? The following cases, in connection with the reasoning of this whole work, will show this alarming fact.

CASE 1. Mrs. L., of Philadelphia, had for twelve years been under treatment of a very active character, for an affection of the liver. For years she was salivated several times, and bled once a month. Her form was such as you may imagine it to have been, viz., drooped, curved, and relaxed in every part. Naturally beautiful, her countenance showed that she, in her primal days, was very interesting, but now it expressed a general flabbiness and laxity. The abdomen was *perfectly* relaxed, and inverted as to shape ; the stomach had no tone, and was very much retracted. She had, for the twelve years, complained of pain in the right side and shoulder. These, together with the other usual symptoms, indicated, as was supposed, liver affection, for which she was treated, and through which it is rather wonderful that she should live.

She was well informed, and very intelligent. She was constantly declaring that she had no liver complaint. Her doctor would say, " *Child*, what do you know about it ?" Sometimes there was tenderness of the liver, and sometimes *not* ; more generally she was inclined to lean toward the affected side, and to press upon it, receiving thereby *some* relief, indicating that there was no primary inflammation, either acute or chronic. She gave for her reason that she had no liver complaint, " that her *liver did not feel sick*," but that it felt as though " it was hanging from where it was hitched," and had done so for twelve years. This was *eloquent*, because it expressed the *fact* as it was. The pain being occasioned by the tension of the hepatic ligaments from the diaphragm and convex surface of the liver, occasioning *not* a severe, darting, pungent, or acute pain, but a dragging, hanging, or pulling and weighty sensation ; the

occasional tenderness being accounted for only by the irritation induced by this unnatural position of things.

On placing my hand at the lower abdomen and back, giving the abdominal mass an elevation toward the stomach, she said, "That hanging from where it is hitched is gone," and "that the side was perfectly easy." The *lace* was applied, and the permanent result may be guessed at; viz., that she was able to go about with comfort, when before she could not leave her room.

Though the greatest names in Philadelphia had been her attendants, yet she could scarcely speak with patience of them, in view of all that she had suffered, when her case was so simple.

This case is a *host* of itself, and is a just representation of a majority of the cases of common *liver* complaint, and exhibits the difference between real and apparent liver affections, and also between the proper and the popular treatment of the same. But we pass on to give one more of the *many* cases which we have relieved by the *lace*.

CASE 2. Mrs. H., of Ct., had for years complained of almost everything. She had an incessant cough, pain in the back, swelling of the feet and legs, pain in the stomach, and great tenderness in the right side. These are the only symptoms necessary to mention; others there were, embracing an almost endless variety.

She seemed fast sinking into the grave, and was unable to walk beyond a very few rods a day. She came to consult me—said that some of her doctors decided that she had dropsy, some consumption, some spinal disease, others dyspepsy, and others still *liver complaint*; but it was concluded that a liver affection was her disorder. Her form was miserable; the whole truncal relation was disarranged as in figure 4. It is therefore easy to see why some said dropsy, dyspepsy, consumption, spinal disease, &c.; because there were, indeed, symptoms of each and all. But there was a mechanical cause that would induce all of the present appearances. I should add, that, in connection with the above, she was borne down with the most oppressive nervousness, gloom, grief and destitution of earthly and religious comfort, that I ever saw. I inquired if the pain in her side was very severe, deep-seated, or sharp? or if the side was hot, or painful on pressure? She answered me "no" in every case, excepting that sometimes it was sore to the touch. She said the pain, in the main, was dull, dead, heavy, hanging, dragging, or pulling, causing her to lean to that side and press it with her hand. The *lace* was applied, and in less than one minute, she arose, and peace and tranquillity were in her whole countenance. She drew a full inspiration, said she could breathe easy, her stomach was sup-

ported, could speak without pain (and even laughed), her back felt better, and as to the side, the weakness and pain were gone. She left the house feeling like a new being, and on the next day rode forty miles with ease. With reason the neighbours wondered at the change.

This effect was only the natural tendency of the support. The organs were all lifted up, thereby relieving the female organs below, and supporting the intestines, liver, stomach, spleen, heart and lungs. Or, in other words, the whole wheels of the machine were put and kept in place, the nerves of organic life were pacified, and went on with their wonted functions.

I shall rest these views on affections of the liver here, adding one single remark, viz., that jaundice, in some of its forms, should always have the *lace* tried, as a stimulant to a *torpid*, or an anodyne to an irritated liver.

Dysentery and Chronic Diarrhaea.—In speaking of these often potent and distressing diseases of adults and children, I mean not to lay down a system of treatment for them, but to offer and impress some *suggestions*. It is well known that there are many causes which produce *diarrhaea* and *dysentery* suddenly, without any reference to any displacement of the organs, and that they require a treatment which operates with philosophical adaptation to the cause or the state of the system. But it is also evident that if they continue to rage, whether chronic or acute, for days or weeks, they must diminish the volume of the viscera, and that, of course, they will recede from the abdominal walls, by this means depriving themselves of support, and consequently will fall to the bottom of the belly, producing the same suspending and dragging sensations that a relaxation of the muscles always causes. This also removes the stimulant or tonic influence of the muscles, pressing on the viscera. Now, in view of the doctrine of this work, and in view of its developments of the weak and irritable state of the stomach and walls, and of the nerves of organic life, is it not plain to see that there must be a want of support, or a serious and irritating effect produced, causing all such patients to bend forward, walk with caution, or lie coiled up in bed to prevent a sense of dragging or tension at the stomach, and of pulling, generally, and of weight at the lower belly? Would not this state be just calculated to keep up or perpetuate all the characteristics of these diseases? The following instance will show the truth of our remarks.

CASE 1. A certain vessel in the East India trade had her crew indiscriminately attacked with dysentery. Those who survived were left with a continual discharge of watery stools. What they ate was not digested, but carried away whole, after remaining but a short time. The dejections were thin and ino-

dorous, and were ejected by a spasmodic effort of the muscular coat of the bowels. So frequent was this, that they "went about almost in a state of nudity." There was not one left to stand before the mast, and they were forced to drive before the wind. It seemed as though life could continue in them but little longer. They had no capacity of abdomen, and the most they complained of was, a faintness at the stomach and sense of weight from head to foot.

From some reason or other (perhaps instinct), one man put on a Russian belt, and was able, on that day, to do some things about the ship. He told his doctor that he had been in trouble but *eight times* that day, and said he felt stronger. A belt was then placed upon every sailor, and they lost no more of the crew; the plague was immediately dried up.

This instance is *full* of instruction, induction and inference.

First. It shows that after the acute state of dysentery is over, if the disease do not cease, the patient should be supported by a *lace*, lifting upwards and backwards, maintaining the proper apposition of all the parts—consoling them by mutual support, quieting their nerves, and taking away every tangible difficulty.

Secondly. It shows that in old and severe diarrhoea the same indications will prevail and should be carried out, and that we should never wonder at our ill-success, until a proper support has been used, in conjunction with other appropriate remedies.

But my attention will now be directed to *cholera infantum*. May not these little sufferers be relieved by support? I therefore recommend that a swathe be applied to all of the above cases, and if it is indicated or admissible, I advise the sprinkling thereon something stimulating to aid in the indication. As children generally have fuller abdomens than adults, perhaps a flannel swathe will do, without a lace; but in adults, the swathe does not lift enough; they require a *lace* to counterpoise the downward pressure of the organs.

Chronic Peritonitis, or general tenderness of the abdomen.—This is common to dyspeptics and hypochondriacs, or sedentary people. It is generally characterized by somewhat of a tumid abdomen (especially at its bottom, as in figure 4), and tenderness felt on walking, the patient being very careful to step softly, to prevent concussion. He carries his abdomen in his hand, leans forward when he walks, and complains of some prickling pains, ever and anon. This disease has too often been treated by bleeding and cupping, with counter-irritation, in conjunction with cathartics, but *without* success. Now, what is the pathology of this state of things? Why, look and see. The belly is tumid, the abdominal contents are pendent, and the peritoneum is put on the stretch. This membrane is very vascular and irritable, and illy calculated to sustain this weight with impunity. Its surface is extended, an undue quantity

of blood is thereby invited to it, creating heat, tenderness and pain. The muscles are relaxed and permit this descent, and the bowels lie a dead weight on the lower ligaments and the bones of the pelvis. They have thus fallen below the axis of muscular support, so that if the muscles do contract in this condition, they will only press down the bowels more and more. Also, the elliptic action of the muscles, whereby the bowels are gently lifted up, is lost, and they now sink like a dead weight, subject to concussion on the slightest motion of the body, producing the sensation of pain and bearing down at the bottom of the belly, and of pulling at the stomach.

This shows that a great share of the supposed cases of functional affections of the peritoneum are not such, directly, but merely mechanical displacements. I have seen the most astonishing relief from such affections, which had been *intolerable* for many years, immediately given by the use of the *lace*, operating, as one might suppose, merely by changing the relations and bearing of the organs and parts.

I will not adduce particular cases here in illustration of the above view, because that almost all the common cases of prolapsus, or dyspepsy, are attended by this affection, and are *all* relieved. I therefore regard the above affection only as an *effect*, not as a *disease*; as a general rule one that does not admit of a specific treatment, but will be relieved by attention to the general mechanical state.

Constipation of the Bowels.—This malady is generally present, and helps make up the aggregate sufferings in dyspepsy. But, nevertheless, I choose to consider it as a distinct affection, as it may exist without the other phenomena of dyspepsy, or even be the very cause of them.

Constipation implies an improper extension of the fæces, and an imperfect evacuation of them; but not a deficiency of them. What is its pathology? Let us see? In the first place, we find most constipated patients somewhat of the form of fig. 4, with the stomach retracted, the size of the abdomen inverted, tumid and hard at its base, the abdominal muscles relaxed, the original flexible pressure lost, the common motion to the viscera gone, whereby the vital action of the organs in assimilation is destroyed, or depreciated. Of course the secretions will be deficient and imperfect, and the muscular coat of the intestines will be torpid from the same cause. The reader will also see that the visceral mass (a mass of organs) is now resting, to a great extent, on the lower, large bowel, where it passes into the pelvis, and that it is thereby shut up, and the decent of the fæces mechanically impeded. By this means the *colon*, or large bowel, will be largely distended, its secretions being absorbed by the heated mass, the folds of the lining mem-

brane are torn open, and the whole is thrown into an infelicitous state for the process of defecation.

The question now is, is it medicine of any kind that will cure this affliction, or do anything more than gain temporary alleviation? Surely medicine cannot cure such a case. For it is evident that two things are necessary, viz., the mechanical replacement of the organs, and the increase of nervous energy; and it is also plain that the latter will be effected by the accomplishment of the former, through the pressure of each organ against the other, by the power that elevates the whole. I therefore say, that, let the costiveness be ever so bad, we have no business to attempt a cure by any constitutional remedy, previous to having applied a *lace*, or some other efficient mechanical appliance for restoring the original and mutual relations among the organs. I shall therefore not prolong my remarks on this subject, but simply say, that abdominal elevation and support are the philosophical and rational, as well as successful, applications for constipation of the bowels, in every degree and variety of it. Very many have been the cases that have tested this principle, and *none* of them have failed; and should this be true (as it is), and be universally known and applied, who can *tell* the result to mankind? Subjoined are a few cases among many, which I say *honestly*, may be considered as fair representations of all others where the *lace* has been tried.

CASE 1. Mr. C., of Connecticut, a man of great intellect, had for many years been so afflicted with costiveness that it was common for him to pass eight or ten days without an alvine evacuation. His feet were always cold, his head always hot, dizzy, confused and pressed; his mind had become much impaired, so that he ceased to write, argue, reflect, or transact any business but of a bustling kind out of doors. The community even whispered it about extensively that C. was failing, and becoming imbecile and childlike. He told me that he thought so himself, and was afraid of idiocy or insanity. He was very irritable and irascible, gloomy, hypochondriacal, and had thoughts of suicide. His abdomen was tumid and indolent, large at its base and very hard. The *lace* was applied; in one moment he said he felt better at his stomach and head, and was exceedingly happy for some days; after which, for some time, I did not hear from him. When he afterward came, said he, "I thought I was going to die. My abdomen became tender, and the *lace* put me in torment. I concealed it, and determined to stick it out; but at length could not bear the weight of my clothes. Finally, I was suddenly called to the stool. This was followed by a most violent faecal efflux, and upon this the tenderness subsided and the bowels went on enjoying a daily evacuation. The coldness of the feet, and heat,

confusion and throbbing of the head ceased, and the mind became vigorous and flexible."

This case shows that the pressure, finally, but by degrees, excited in the bowels a perfect *storm*, because they had been so very low that an ordinary stimulus could not produce an ordinary excitement, and therefore when it did come it came like a whirlwind. This effect was uncommon, but perfectly in keeping with the circumstances of the case; and even had the case not terminated well, and the inflammation been a *morbil* effect, the natural tendency of the *lace*, it proves a something, viz., its power to produce an *effect*; and if we can prove an effect, we can prove a favorable one by modifying the circumstances of the application. The end of this case was very satisfactory.

CASE 2. Mrs. F., of Ct., married, aged about 31, a teacher. Seldom had an evacuation oftener than once per week. Her head ached always, and she experienced all the other affections of the head usual in such cases. She also complained of an intolerable weight at the pubes, and great tumidity of the abdomen there. She had for many years been afflicted, and every female derangement was attendant upon her, so that she could not stand without resting one foot upon a stool or chair.

The *lace* was applied in her case, and in a *moment* she experienced relief from every symptom but that of costiveness. She afterwards informed me that from that day she had been happy in every bodily respect; that the costiveness was entirely removed, and she felt as though a new life was before her.

CASE 3. Mr. F., of Ct., a tailor, was dyspeptic to a great extent. Emaciation and constipation were very predominant in his case. He knew nothing of the privilege of natural faecal evacuations, and was harassed with every feeling and temptation that any poor hypochondriac and dyspeptic could have. I hesitated about applying the *lace*, as it seemed that he hardly had abdomen enough to support, but on its application, he found immediate relief. His bowels were perfectly restored, their daily evacuation was set up, and his health, appetite, rest and mind, all returned to their wonted state.

CASE 4. Mr. R., Ct., had for twelve years been so severely afflicted by costiveness that when anything passed him it seemed like "matter" (as he termed it). He was meantime afflicted with the most dreadful gloom and melancholy. He endured every kind of treatment from many physicians, but still grew worse. His case excited universal sympathy and regret.

The *lace* was applied to this patient without much hope, but to my astonishment, his own, and that of all who knew him, he was relieved entirely—cured from that day, and resumed

his wonted vigor and cheerfulness. It was a matter of common notoriety and wonder throughout the neighborhood. I considered this case among the great triumphs of the principle, and so great was his gratitude and confidence in the system, that he rode from one village to another to tell those of his cure who were similarly affected.

CASE 5. Miss F., Vt., aged 20, had always lived a sedentary life, and was now broken down entirely. Her bowels were very constipated, and her abdomen pendulous. This patient suffered everything that any one could from the direct and reflected effects of constipation. The *lace* at once relieved every symptom, and restored perfect regularity of peristaltic action, from the day it was applied,

CASE 6. Mr. C., of Vt., aged 40, was habitually costive, without any regularity at all in that respect. The *lace* was applied to him for other affections, which were relieved; but he said that he was now compelled to pay daily attention to the calls of nature, since wearing the *lace*.

But why multiply cases, there is a sameness in them all; hundreds of them are at hand, and of the most aggravated character, all of which the above truly represent.

Of Piles or Hemorrhoids.—This is a most distressing malady, and is of more common occurrence than is supposed. It should be placed along side of costiveness, as eight-tenths of the cases of the piles accompany or follow costiveness; and indeed, we have shown, in the pathological part of this work, that constipation explains the usual *rationale* of piles. This we here repeat in short, before we proceed to the treatment, and detail of cures.

We find in constipation that the mucous membrane is distended and irritated by the foreign mass, which is hard and dry, inducing congestion in the lining membrane. We notice also, that in the exit or expulsion of the mass, while the mass and membrane are in a dry state, there must be a forcing down of the membrane, a tearing open of its folds, and a thrusting of it into the world before the excrement. This membrane, at first, may be drawn back before the sphincter muscle (muscle contracting the *anus*, or outlet of the bowel) contracts upon it, but soon it will lose its tone, become congested and relaxed, and be prolapsed at every defecation, or evacuation (and perhaps between), upon the slightest straining. To aid in this, the bowels are pressing down on the rectum, or lower bowel, continually bearing it down, and perpetuating the tendency to its inversion. By this pressure, also, the veins returning the blood from the intestines will be compressed, producing an enlargement of them. If this state exists long, there will arise tumors on the mucous membrane, which will be shut out of the body by the sphincter muscle, or *anus*, which

will be very sore, and often require an operation. Now, what are the indications of cure? We say, that they are obvious, viz., to take the weight off from the bowels by raising them up; to restore activity by pressure, and draw back the relaxed *rectum* by the elevating power of the *lace*; thus, when at stool, the bowels may be rested upon the pad of the *lace*, and not upon the *rectum*. I do aver that eight cases out of ten will be cured or relieved by this means immediately, or very soon, and that no one need wonder why he is not cured, till he has tried the *lace*.

I subjoin some faithfully reported cases, as representatives of numerous ones that have been treated by the *lace*.

CASE 1. Dr. Kellogg, of Pa., who was afflicted by bilious or spasmodic colic habitually, until he was broken down, as in fig. 4. He was unable to ride without a recurrence of it. He applied a *lace*. His abdomen before was peculiarly tumid at its base, and tender; the stomach retracted and sore, and the waist diminished. On the evening of the first day after its application he called to say that he had done more riding that afternoon than he had done for months, and had accomplished it with perfect ease. But he stated that what most surprised him was, that he had been, for the last six months, so seriously afflicted with the piles that it was torment for him to ride, but that he had not felt the least symptom of it that day. Moreover, six months after he informed me that he had not been visited by them.

The idea was new to me; but, on reflection, I saw the reasonableness of the thing, and from that day instituted a set of experiments on that point, expecting that something of importance would be the result. in which I have not been disappointed.

CASE 2. Mr. C., of Philadelphia, who had labored for very many years under an aggravated dyspepsy, by which he was brought near the grave, was also afflicted with piles, to his great inconvenience, and had been for many years.

This gentleman made trial of the *lace*, and other physical remedies for relief from his complicated complaints, in which he succeeded, and found that the piles were among the first difficulties to give way. His was an obstinate case.

CASE 3. Miss E., Vt., milliner, among other female difficulties, was sorely afflicted with piles, so that to sit was often impossible. Her bowels were *always* very costive, producing the usual long train of afflictions consequent on that state.

This lady applied the *lace*, and was immediately relieved of all her afflictions, but more especially of the piles. Judging from her own expressions, she was about entirely relieved.

CASE 4. Mrs. G., Vt., aged forty, had been an old and habitual sufferer from piles; they were constant and very pain-

ful. The constipation of the bowels was great, and aggravating in many respects. This lady applied the *lace*, and, notwithstanding she was of so very irritable a constitution, and so restive that she could not bear the pressure of a gentle lace for more than two or three hours at a time, she declared, that, from the *hour* of its application, she felt relief. This patient entertained the pleasing prospect of incalculable relief, just in proportion as she could be able to endure the pressure of the *lace*.

CASE 5. Mrs. B., Vt., aged forty, was a lady of great intelligence and enterprise. She had for very many years been subject, or predisposed, to the piles, and had succeeded in partially ridding herself of them. But her doctor, through fear of a pulmonary affection, re-established them by *aloes*, designing, by their irritation, to draw away the action from the lungs to the lower bowel. The effect on the rectum was intolerable; the piles returned in a fearful force, so that the mucous membrane was extensively inverted, exceedingly congested and enlarged. She had endured two or three operations, or extirpations, with considerable relief; but, when I saw her, she had been making ready her affairs to submit to another operation, and the following was her description of the case. She said that she was not costive, but that she had great trouble in her alvine evacuations. The calls were as regular as was desirable, but the efforts only partially successful. Each evacuation would be accompanied by great straining, also by a dropping down of the folds, or "bladders, of the inner coat of the bowel," as she called them, seeming to obstruct the descent of a portion of the fæces. In a short time she *would* be again called to the stool, with the same efforts and results. This would, in general, have to be done three times each morning, when it would seem that the evacuation had been complete, and all was perfectly easy again until the next day. She also stated, that after every faecal effort, she was always obliged to lie upon the floor with the hips elevated, and, with manual effort, return the bowel. She seemed like a *lady*, and one of uncommon firmness and resolution, but her countenance and manner indicated that she was about worn out. In this situation she superintended her concerns, and with how much comfort you can judge. The *lace* was applied to this lady in the morning; in the evening I called to see her. She seemed like one anew created; her countenance showed it, but her *tongue* told it. She said her family told her that she was crazy. Two days after, I called to see her again, and found her doing well. She informed me that she had been able to evacuate her bowels at *one natural* effort with ease, and to pass the day without any of the former torment, and that she could do *anything* as well as ever. Formerly she could

not lift, reach, or stoop, without a prolapsus; but now it was not so. She said, in illustration, to-day, I have helped to tack down the carpet, which, for years previously, I have not been able to do.

Let these suffice on this point; a large number of similar cases are still at our hand, but these are sufficient to exhibit the correctness of our theory, and the remarkable success of our mechanical remedy. We will not conceal our opinion upon the subject of abdominal support, but candidly aver that the world have yet to learn (in our estimation) the thousandth part of its importance, in a preventive, or remedial point of view.

Of Pain in the left side, or Chronic Inflammation of the Spleen. —The spleen is liable to a variety of diseases which are common to other visceral organs,—such as acute or chronic inflammation, arterial or venous congestion, enlargement or diminution of its volume, &c., &c. The affections may arise from local or constitutional causes, and be either of a primary, direct, or indirect character. This organ is situated in the left side, under the short ribs, and is the seat of much difficulty, and *that* generally of a chronic character. It must be acknowledged by the profession, that what is called an *affection of the spleen*, or pain in the side, has baffled us much, and been more unsuccessfully treated than the affections of any other organ. The view which we have taken respecting the chronic and mechanical relations of this organ shows, that a majority of the *supposed real* affections of the spleen are *not* real, and explains the cause of our ill success. The more common affections of this organ are, lameness, some tenderness, and a dead, dull, deep and continual pain in the leftside, for which cuppings, leechings, issues, and every variety of counter irritation are applied, and that too, often without permanent or radical success. Were this disease such as it is supposed to be, viz., some degree of inflammatory affection, it would, and *must*, generally be relieved materially by this treatment. But Dr. Dewees has confessed that his success was not at all satisfactory on this point.

We now see that the spleen is pendent from the diaphragm (if the patient have at all the form of fig. 4), and that its ligaments are put on the stretch. It also appears evident, that, in this case, the remedy is to elevate the abdomen, and keep it so by the firm, gentle, and flexible agency of the *lace*. Again, it is scarcely ever that these affections of the spleen occur, excepting there be signs of a relaxed state of the abdominal muscles, or, in the female subject, of prolapsus, &c.

Dr. Dewees states this in his practice, and also states that they almost universally give way to a proper treatment of the prolapsus.

I shall not detail any cases on this point in particular, as they are so numerous, and so connected with other affections, and will only say, that let no man proceed to treat this affection (under the case here supposed), by the usual remedies, until he has tried the influence of support, percussion, friction, and the morning cold bath, and evening tepid saline sponge. I have never known a case of the kind referred to, combined with a relaxation of the abdominal muscles and its effects, to fail of immediate and entire relief in the use of these means.

Retention and too Frequent Discharge of Urine.—These two states may have one cause, although they are so opposite in their phenomena. The first of them is exceedingly painful and dangerous; the latter less so, but very inconvenient and troublesome. Often the same case will alternate from one to the other difficulty. It is highly worthy of remark, that very many, or most of these cases, are dyspeptics, hypochondriacs, or cases of prolapsus, whose forms correspond quite accurately with figure 4; or, in other words, we find that retention, or misretention of urine is attendant on, or attended by, *prolapsus*, and all the above results of mechanical pressure. The past view of the subject explains what *may* be the cause in many cases, viz., that the abdominal organs are fallen on to the bladder, permanently, either inverting it, forming an acute angle in its neck, obstructing the flow of the urine, or compressing it, diminishing its capacity and ability to retain the proper amount of fluid, causing the more frequent emission of it. In this case it is plain that the difficulty is not in the urinary organ, or its appendages, but in the neighboring relations which the organs hold to it.

How inappropriate, then, would be any internal remedies for retention, or incontinence, under such circumstances; yet many cases of this kind exist for years, and never are suspected—the patient doing and taking *everything* but the *right thing*. I have become so used to this, that I have detected it in many cases that have baffled the ingenuity of the best practitioners, and have had the pleasure of seeing them yield to abdominal support.

Pregnancy is often a fruitful cause of this difficulty, and it is then ascribed to the proper cause, but not suspected in the slim, gaunt subject. Let every practitioner, and every patient thus afflicted, before proceeding to *medicate* for either of these afflictions, first look at the form, and inquire if there be not a tangible cause—some mechanical displacement. If you have the form of Fig. 4., and feel a sense of weight at the base of the abdomen, and have other symptoms of muscular relaxation, let him apply a *lace*, and very likely an immediate amelioration may be effected.

It is often astonishing what relief is experienced, even in

old and obstinate cases. This point is so obvious, and the cases so common and interwoven with other diseases, that I shall not take time to detail cases in illustration. But the reader may rest assured that there is no lack of them.

In various cases of the prostate-gland, the abdominal support has done much when there was constant tenderness and pain from the superincumbent weight on the diseased and irritated part; although it cannot cure, still it removes a great source of irritation.

Affections of the Spine.—We have seen that the spine is made and arranged to sustain the whole trunk, and that it does it with ease *only* when all the relations are perfect, and according to the view laid down in the preceding chapter of this work, whereby the body is balanced on the spine, or its axis, and all the abdominal organs thrown as nearly into the centre, or axis of the body, as can be, when the body is in the healthy state and erect posture. In this set of relations we see that there is but little leverage on the spine, and that the effect of gravity is only to make the posture the more firm and easy. We have also seen that a crooked posture, and relaxed muscles, wholly disarrange this set of relations, inducing a corresponding change of operations, of a serious and afflictive character. The weight of the body is then thrown on to the *substance* or body of the vertebræ, or spine, in lieu of the processes, thus relaxing the abdominal muscles, letting the abdominal contents fall and roll farther from the axis, thus increasing their leverage on the spine, and putting an increased and perpetual burden on the muscles of the back. They must now carry the whole to a great disadvantage, producing the necessary results, viz., every degree of pain and disease of the back, genuine spinal irritation from pressure on the cartilages, &c., and also spinal or muscular weakness from exhaustion, which may exist alone, or in combination with real irritation.

It is well known that spinal irritation can and *does* often produce every affection of the viscera; and that it is often not suspected until fruitless efforts have been made to cure the symptoms, as primary diseases; then all is often suddenly relieved by a cupping, or some counter irritation to the back. But let it be remembered that spinal irritation calling for depletory treatment, must have *some* degree of inflammation present, and that when there is this, there must be a sensitiveness on pressure, and the reduction of this inflammation only *relieves*, but to allow of a return, unless the pressure of the body be in some way removed from the susceptible parts. This accounts for the frequent failure in the common treatment by depletion.

The practitioner should *always*, then, after his patient does not *entirely* recover by the common practice, put on a *lace*, to

restore the proper relations—the axis of the body—and support the trunk on its own organs, by elevating them. I have been astonished to see certain patients immediately recover from very old, genuine irritation, by the *lace* alone, after years of suffering and disease, and treatment also. But it seems to me that, as a general rule, the topical, counter-irritating treatment and the *lace*, should always be combined. In this way the cure will be hastened and pain saved.

This idea may be said not to be new, as so many bandages, jackets, shoulder-braces, and metal splints have been devised for such cases. But a moment's reflection will show that these are no support at all, properly considered, and operate by merely acting as screws to squeeze, or as posts to hold the body, or for it to lean upon, doing in this way much hurt, by compressing the muscles, or by inducing increased activity in the muscles of one side and torpor in those of the other, thus destroying their equilibrium, that true power by which our symmetry is preserved. The effect of the *lace* is very different, as it does not compress or confine any muscle, but supports them, and elevates or lifts the whole trunk as it were, the hips being the pivot of action. I, therefore, in all cases of protracted spinal disease, advise the immediate application of the *lace*, and the cultivation of the erect posture by calisthenic exercises. Should this fail, then I would put on the cups or leeches, until the tenderness is reduced materially, and following them by counter-irritation, if necessary;—(I speak of chronic, or standing cases.) I shall not prolong my remarks on this point, but proceed to give a detail of cases illustrating the above principle.

Before doing it, however, I will speak of spinal weakness, or *muscular* weakness of the back, either alone, or in combination with the irritation, as was noticed in the pathological part of the work. This weakness has often, *too often*, been mistaken for inflammation, or genuine irritation of the spine, and treated accordingly, without success, to the exhaustion of the patient, and great suffering also. This state is distinguished from the former, by the want of that intense tenderness of one or more of the spinal bones, and sometimes the reflection of the pain to some of the organs in the trunk. The patient on pressure answers *moderately* as to the amount of pain produced—“ ‘Tis tender, sore, or it aches”—in lieu of cringing suddenly. But this *weakness* may exist in combination with the irritation. The treatment for the weakness alone, by topical and counter-acting applications, will always irritate the patient, as she is more likely to bear tonics than depletion. It has been truly surprising and gratifying to see how such protracted, exhausted cases—mistaken cases—do immediately recover vigor by the simple application of the *lace*. Indeed, I regard this distinction

between spinal irritation and muscular weakness to be one of the most important points that is comprised within the consideration of spinal diseases.

A prominent object in the following cases is, to show the superiority of support at the back and not at the top of the trunk, or at most, that in all cases where superior support is requisite, the lace must be peculiarly so, to give efficiency to the former.

CASE 1. Miss H., Ct., a young lady, had for four or five years been afflicted with spinal *irritation*, so much so that the gentle passage of the hand up and down the spine produced a general horror or shuddering, with a snapping of the eyes, and strange feeling in the head. She had been unable to walk or sit erect, but drooped on one side. The head ached continually, and the mind was always confused, and could not endure mental application. The stomach was retracted, the lower abdomen tumid, and respiration short; the figure that of number four. I had no faith that anything could be done in her case, as it was extensive and severe, and had been treated by all the eminent men of the profession in the vicinity. But the lace was applied, and astonishing to tell, she exclaimed, before she arose from the recumbent posture, "I feel better;" and on rising she said, "My head has not felt so clear for a year." All uneasiness was gone; she sat and stood erect with ease, and she was afterwards able to apply herself to her studies and various manual duties with pleasure.

CASE 2. *Cure of Curvature without Irritation.*—Mr. A., of Ct., was a large and fleshy man; his form was greatly bent to one side, so that one shoulder was much the lowest; his spine was much curved, but with no tenderness or pain. The abdomen was full, heavy and pendulous; he was unable to walk more than a few rods, on account of great weakness in the back, or giving away in it, through the weight of the trunk; it falling and pressing out of the axis of the body, the equilibrium of muscular action was broken. So great was his deformity that I considered him a hopeless case: but I found that he could straighten the curve when in the recumbent posture, or by hanging to a hook or rope. The *lace* was applied; he arose and stood firmly on his feet, and erect, too, and said that he felt strong and well. This effect continued to be permanent.

In this case the *lace* took the burden, and relieved the spine of its load, whereby the remaining muscular energy was able to carry its charge erect. This shows that curvature should *not* be treated by compression, but by support, and the cultivation of equal exercise in the antagonistical muscles.

CASE 3. Miss F., Vt, a tailoress, had been afflicted for years with serious spinal irritation, inducing the bent posture, and all the complicated effects of relaxation and displacement, more

especially on the lungs, leading herself and her doctors to apprehend an organic affection of them. The back was very weak and sore, and could in no wise hold her up or bear pressure with the finger. The *lace* was applied to her, and instantaneous comfort and growing relief was the result; her form was improved, her respiration and her general strength also. She afterwards (six days) paid the price of the *lace*, and with a smile said, "There, doctor, you have my thanks, I assure you; that is but a small compensation for the comfort I have already received from your counsel and the *lace*."

CASE 4. Mrs. M., Vt., had been a plague to all the faculty, and to herself and friends for years. She was afflicted with a most obstinate spinal irritation, affecting the spine, the heart, brain, and everything else. Every degree of cupping and counter irritation was used, and every variety, but all to no effect; the intended remedies even seemed to wear her out, and finally all were worn out with the case, and it was given up. In this dilemma the *lace* was applied, expecting only to relieve the suffering from the spinal disease, but more especially to relieve the prolapsus, leucorrhœa, costiveness and dyspepsy. She was advised to try the cups and irritation, in conjunction with the *lace*, to see what might be done. In this her physician (Dr. R.) agreed with me. He called to attend to it, but found the patient indisposed to submit, as not only were all the common troubles relieved, but the weakness of the spine also. She immediately set about her domestic concerns herself, and with a pleasure and ease before unknown.

This case astonished the faculty, and made much impression upon them in favor of the *lace*.

CASE 5. Miss C., Vt., was one of the oldest, most complicated, extensive, and obstinate cases of spinal irritation in Addison County. I need only say that all that friends could advise, or ingenuity invent, had for years been assiduously tried, and with no relief; perfect irritation and perfect weakness were present. Her trunk could scarcely be sustained by the spine. Every female debility set in; the heart partook largely of the effect, and also the brain. She seemed to be a wreck of matter and arrangement; she could walk but a few rods, and sit but a short time. The whole length of the spine and surface of the back was tender, and ached sorely,

The *lace* was applied. I would also state that her abdominal walls were peculiarly flabby and relaxed, and seemed to afford no more real support to the viscera than a large knapsack would. She was immediately able to stand or sit erect, walk near a mile, and enjoy herself, as she said, well.

This was a case where no radical cure was effected, but where there was great and invaluable relief obtained, and such relief as no combination of treatment could afford.

CASE 6. Miss L. and Miss M., two young ladies, milliners, were unable to labor in consequence of a universal tenderness of the spine. The mind, the heart, the stomach, bowels and uterus all shared, to the full extent, in the derangement, constituting them two most miserable beings, without comfort or prospect of it.

Let it suffice to say, that the application of the lace removed *all* the aggravating symptoms, and restored them immediately.

CASE 7. Miss C., Mass., was among the most pitiful cases of spinal irritation that I ever saw. It had been of three or four years duration. She had been in the hospital many months, unable to turn herself; her mind was wrecked, and almost gone; she was childish, though not idiotic. The back was one extended line of inflammation; the body was bent forward; the heart was subject to the most dreadful palpitations, even to swooning on the slightest excitement of body or mind; the respiration was short and labored; the stomach could bear almost nothing; the bowels were constipated, and prolapsus and leucorrhœa was severe.

This is but a faint description of the case. Her back was one extended cicatrix from cups, leeches, the moxa, and other counter irritations. As to her treatment, it had been the best, and everything any respectable authority could suggest, but none could help her beyond the ability to walk about gently. She said, that if she could breathe once more, and stand erect, she would not ask any farther aid.

The *lace* was applied, and, to her ecstacy, she did straighten up immediately, and exclaimed, "I am straight once more! I am straight once more!" She breathed freely and with ease, the heart's morbid action was allayed, the costiveness, prolapsus and leucorrhœa also were subdued. Her acquaintances wondered at the change, as she ran through the village to tell the joyful news in child-like simplicity. She found this relief to be real, so that she entered the cotton factory (her former place of labor), on the next week.

CASE 8. Miss I., N. H., had many months been severely afflicted with spinal disease, so that for much of the time she could not move or be moved, without great inconvenience and pain. She underwent the usual and proper treatment of local depletion and counter irritation. In the course of time she improved so as to walk a few rods, and sit up considerable of the time. She was very constipated, and labored with the usual attendants on this symptom. Her back was very painful and weak. For months she had not gained at all, nor was she like to, as there was no more call for the usual treatment, or prospect of benefit by it, and nothing else was being done; and almost every attempt to exercise was followed by an aggravation of the symptoms, because she was in an ineligible

state for its prosecution ; at the same time she was suffering with want of it. The reasons for this must be obvious, when we recollect the true philosophy of erectitude of body and its advantages, and the unnatural load on the weak abdominal and dorsal muscles, also the increase of pressure on the already inflamed vertebræ.

At this juncture the *lace* was applied, giving instantaneous relief to the back and stomach. She immediately resumed her proper attitude with ease and pleasure ; her limbs moved with cheerfulness, and in three days she walked to church and home again, a distance of about half a mile, and was refreshed by it. In the short space of one week she was both able and as *disposed* as usual to *romp* freely.

CASE 9. Miss C., N. H., had for years been severely afflicted by a serious spinal difficulty. For a long time she could neither sit nor stand, so irritable was her back. She underwent scarifications and all sorts of counter irritation by the year, and was only relieved temporarily, the inflammation being reproduced, and the muscular weakness kept up by the weight of the body on the diseased vertebræ and the already worn out muscles. The *heart* partook largely of the reflected influences, and the mind was exceedingly gloomy and desponding. At this period I saw her. She could stand upon her feet a minute or two. I applied the *lace*, and in one moment she felt relieved. She walked the room, stood and sat straight, felt her respiration improved, her head clear and mind cheerful. In the course of two or three days she rode several miles to hear me lecture, and in a few days more called at my room, and was, to say the least, a changed person. She, on parting with me, clasped my hand, and said, I shall ever remember you as the means of my restoration to health. Her case produced much feeling in the surrounding vicinity, as she had been so long treated by a reputed man, and got nothing better.

CASE 10. Mr. C., N. H., had for several years been affected with hemiplegia, till he was now, and had been for a long time, almost helpless. One arm was motionless, and the other partially so ; he was hideously distorted by the muscles of the opposite side. His bowels *never* moved without the most powerful cathartic influence, which influence was now very hard to excite.

By the aid of his mother (a strong lady) he could crawl or draw himself across the room. His sense of *soreness* at the stomach, pain in the centre of the breast, and weight at the bottom of the abdomen, was very great and inconvenient. In this case the question was not whether the hemiplegia could be cured by support, but whether he could be made stronger by lifting up the much sunken belly, and of course, taking its weight, to a great extent, off from the spine, and by support-

ing the atrophied flabby muscles of the back. The *lace* was applied and in the same hour he walked across the room with great difficulty, to be sure, as must every distorted, paralytic man. He breathed easier, rose from his chair easier, and was much comforted in many other respects. In the space of two days, his bowels were moved by the resources of nature, and have continued to do so ever since. His attendants say that he is now not near the trouble he formerly was.

This case learns us *much*, in many points of view. It learns us that apart from the *disease* that dissolves our *house* or *clay* tabernacle, the *natural weight* of it not being abated, comes in and acts as a consummation of the dissolution, it acting now to a great disadvantage on the building, which has changed its bearing to this passive principle; so that in these cases, when the philosophical arrangement is destroyed by the want of integrity in some *one* only of the parts concerned in the normal arrangement, the mere weight of the body is often our greatest incumbrance in the way of either relief or partial comfort. It learns us that when the machinery *as a whole* becomes deranged, that very beautiful thing becomes our clog, our load, which we may well long to lay down, as is expressed by the poet. It learns us that two things are always to be kept in view, viz., to cure, and to alleviate, or make endurable; or rather, to place the body under the most advantageous circumstances to bear the incurable disease, and *that* for two reasons, viz., that we remove all aggravating tendencies, and give temporary comfort.

CASE 11. Mr. G. H. had for many years been *perfectly* paralytic in his lower extremities. He seemed to have no irritation of the spine, of any kind. He had undergone every variety of treatment that the oldest and ablest of the faculty could perseveringly apply, with but very little benefit. He could not bear his weight on his limbs. He seemed to have no disease, either local or constitutional. The *lace* was applied, which commenced a gradual improvement, so that in three weeks he could sit erect and walk across the floor by the aid of his crutch and cane. His spirits and courage improved, and the last I knew of him he was on the gain.

This case was a most striking illustration of the power of gravity on a paralyzed man. It pressed down his little remaining resources. It also shows the power of the anti-gravitating influence of the *lace*, in encouraging nature to exert her flagging powers for the restoration of her functions.

The following cases show the truth of my views on the philosophy of attitude, and also that when the body is weak and droops, it is not from weakness of the spine, but of its muscles, or a part of them. It also shows (what others have also shown, but not urged *practically*, as was needed), that the

way to cure curvature, or inability to sit or stand, is not to fix a leaning post for the patient, nor to put her in the screws so that she *cannot* fall; for in this way, the muscles are more palsied, by doing for them what nature should do; in the other case, it compresses the muscles and prevents their action. In *these* cases the patient straightens, because she *cannot* crook, stands because she *cannot* fall, and the weak muscles are gaining nothing by exercise and partial support. We see then that steel or brass jackets, in the main, only tend to perpetuate the evil (i. e., when there is *any* energy of the muscle left). She depends entirely on it. She leans on her shoulder brace, and when it is removed, she is lost and droops down again. But by the *lace* the weight is taken off the spine, through the lifting up of the body, causing the abdominal organs to press back the chest, rather than drag upon it. Also the muscles of the back are strengthened and made more tense by pressing them in towards or on to the spine, causing them to pull back the shoulders, thus causing as much weight to rest behind the axis of the body as before it. In this way we see that the body is now in its normal state, resting on its axis or pivot, viz., the spinal processes of the bones of the small of the back, the weight being equal on all points. We also see that all the organs in this posture must preserve their mutual bearings, by the thus made tenseness of their surrounding walls. We also see that where this is accomplished it is not done by depriving the muscles of their use and proper exercise; they are *all* at liberty, and in an eligible situation to act under the will and force of circumstances. Or, in other words, the *lace* is injurious to no muscle, but only acts as prompter to their action, which is to be gently drawn away, as the resources of the system increase. And here let me remark, in justice to truth and myself, that there is *all* the difference between assisting and gently encouraging a muscle, by artificial support, and perfectly taking the work *out* of nature's hands, rather encouraging the difficulty than relieving it.

CASE 1. *Cases showing the superiority of the Lace over the brass corset.*—Miss P., a young and beautiful lady, had lost one sister of irritation and distortion of the spine; she died under the ordinary treatment of brass stays and severe lacing and pressure. She herself was verging to the same condition, and had visited an institution which gave special attention to these complaints. She wore a brass corset or jacket, which nearly reached round her; it covered her whole back. When it was well laced on she could remain quite straight, by leaning on it, but on removing it she was “lost and gone,” as she said. The *lace* was applied in her case, and in one moment she declared that the actual support that it gave was greater than that of the corset. She also had more liberty and ability to move, and to

call the palsied muscles into use. She continued to use the lace, declaring great preference in its favor.

CASE 2. Miss E., of Southbridge, Mass, had been an inmate of an institution for the treatment of spinal affections, and had worn the corset for several years. It completely emaciated her and weighed several pounds, and served truly to hold her up considerably, for she was terribly deformed. On hearing me lecture on the philosophy of spinal curvature and the proper manner of applying support, and of its action, she determined to try the Lace. The corset was removed and the *lace only* was applied. She instantly observed that she felt stronger, though she felt lost without her corset. She never re-applied it. Her form actually improved and her strength also.

The secret of the whole was, that now the weight was removed from the curved spine and weak muscles by means of the lifting agency of the bowel pad of the lace. 2d. That the small or moveable part of the back was pressed forward and sustained there by the back pads. 3d. That the shoulders were drawn back and held so by pressing the elongated muscles to the back. Want of room prevents citing any more cases in point.

Now when we see that the brass corset holds the body up, and the *lace* makes the body hold *itself* up, we must discover that the latter is to and *should* be preferred in all cases of spinal weakness, and I give the few following reasons, viz. :—1. It does all that *any* instrument can do. 2. It does all it does do without any undesirable contingency. 3. Because it is so light, so convenient, and so easy of application and removal. 4. Because it affords its aid sooner than anything else.

But why multiply cases; I might make a book of them. The above are only a true and faithful representation of a most numerous class of cases—the *fag-end* of practice.

From these cases we learn, that in irritation, or weakness of the spine, it is not bracing, or holding strength that we want, but lifting, or that the weight be taken off from the spine, and the muscles left at liberty, whereby they can exercise themselves, and thus rouse their dormant powers; and that, when this is done, then depletory and counter irritating treatment, if required, may be used, and with a good prospect of success. Let us also learn, that the way to cure curvatures is not to shut up the body, or compress it, or hold it up like an inert post; but to remove the continually gravitating state, and extend encouragement to the flagging powers. Let those who *begin* to feel the pains and weakness of the back, flee to the cold spring, or the saline sponge and friction, with calisthenics. Let them see to their habits early, and correct the evil in the bud. Let them resort to exercise in the open air, and apply the *lace* before they are so miserable that they cannot live without it,

(and hardly with it); let them use it as an accompaniment, a convenience and *body reserve* for times of need and exposure.

Effects of the lace on weak children—But I cannot close this part of the work without advertizing to the influence of a certain relaxation on some children. There are a great number of children, especially in cities, among the rich, who early show signs of debility by their pale skins and soft muscles. As a general thing, their minds have been cultivated too early, and have become too much developed for the body's welfare. But this debility and general laxity are sometimes seen in children of two years of age and upwards. They complain of fatigue and languor, too early in the morning, and manifest a disposition to lounge upon the sofa, &c. They soon are drooped, shoulders rounded, stomach contracted, and abdomen generally tumid or emaciated.

The breast, perhaps, is pushed out like rickets, the lungs give some evidences of predisposition to disease, and the bowels are either constipated or lax. The child goes on—perhaps grows too fast, or perhaps the reverse.

This state is more common to the age of from ten to fourteen, but occurs in every period previous. The parents are concerned about the decline of the child, and too often have reason to be so, as this is a kind of turning point, whether their vital energies shall prevail or not; and, should they not prevail, the *Rubicon* will be past, and the termination be too often unfavorable.

At this juncture, a gentle influence in nature's favor, aiding her *organic* relations, will cast the die in favor of the patient, and put it on the ascent. The patients above alluded to more commonly are girls.

I have often been consulted for such patients by anxious and indulgent parents, and I repeat, that they too often are precocious, either in mind or body, or both, thereby making too great a draft on the vital resources. Hence such patients love the house, and assume manly and womanly attitudes and manners, physically and intellectually; show an indisposition to romp or gambol, and complain of prostration and headache on attempting it. When you come to examine these patients critically, scrutinizing every organ, you will probably find no organic or primary derangement. But take a natural and superficial, yet understanding view of them in the light of *tangible* science, and you will see the trouble plainly before you. The fibre generally is soft and flabby, and the body is being crushed by its own gravity. Place your hands to the back and abdomen of such patients, and lift up the latter while you press the former, and the child will breathe easier, and feel better. I shall detail but three cases on this head, as

I have not many marked ones in my journal, but these cases are bright ones, and will serve to illustrate the point in hand.

CASE 1. Miss H., aged 13, was a beautiful and interesting girl, of lymphatic form and temperament, skin very fair, and flesh plump and soft. Her limbs were always weak, her back always tired, and her head generally aching. Her ambition was great, but it turned to music, literature, and womanly employments, rather than childish sports. Her abdomen was tumid, and her bowels costive, or lax alternately. She had considerable cough, and pain in the chest. Much alarm was excited about her, and consumption was the dread, which was evidently waiting its opportunity. But no primary disease of any organ could be detected. I decided the case to be one of general organic laxity, calling for support, fresh air, frolicsome exercise, and entire abstraction from intellectual effort. All this was properly attended to, and the *lace* was applied, which at first created some irritation, but soon became comfortable. In one week's time she was a changed child; her spirits had returned, her countenance had lost its gloom, the pain of the head, breast, back and limbs, was gone, and she could endure any amount of frolic and fun that others could. So great was the change in one week, that the anxiety for her fate was given up, and lost in parental fondness.

CASE 2. A lady residing at No. 405 Hudson street, New York, writes as follows to the Editor of the New York Tribune:—

"MR. EDITOR.—It is well known that childhood is the period when the foundation is laid for feebleness and distortion in youth; also, that a successful antidote or remedy has not become generally known. My daughter, now 12 years of age, has ever been feeble, intellectually inclined, and both unable and indisposed to recreation or labor; was easily prostrated on the slightest exercise; her body leaned or drooped on sitting or standing. At length, a progressive deformity of a shoulder and hip insidiously commenced, which has mocked the best appliances from the most eminent counsel. Having heard much of Dr. Banning in such cases, also of his *Brace*, I applied to him, and by the aid of his easy and gentle body *Brace* or *Lace*, the most happy results have ensued. My child is now improved in form and attitude; her strength and powers of endurance have very much increased, so that she plays freely and can walk like other children. The change is *evident*; and my heartfelt gratitude to Providence I give expression to by this act of *philanthropy*. I believe that thousands of distorted and enfeebled beings might be remedied and relieved by a timely resort to Dr. B. and his directions. The great advantage of his appliance over others is, that it acts by *lifting* and *supporting*, and not by compressing the

body—by not compressing any muscle or impeding any motion. It is applied at the *base*, and not the *top*, of the sinking pile.
A MOTHER, 405 Hudson street."

New York, May 1, 1845.

CASE 3. Master M., N. Y., was much distorted, weak and indisposed to exercise; easily fatigued—when he stooped or bent, he leaned to one side; back ached much. On application of the "BRACE," he instantly remarked how strong he felt. His form, strength and condition are much improved. I could follow these cases with a *large* number of others of this city and from Boston; but the above must suffice. Judge ye, parents, between the Lace, a *support* to the abdomen, and back, and the *shoulder brace*, which is so insidious in its evils, and so deceptive as to its good.

Let these cases, and others like them, teach us that medicine is not the thing for the constitutions of children who are dying of physical, moral and mental oppression, and that the danger of omitting to take the above precautions and remedies, in analogous cases, is very great.

Of Habitual Colic.—Many are troubled with an habitual colic, or a colic which becomes habitual. In most of such cases you will find the patient's form like that of figure 4. The shoulders will be curved, the head drawn down, the form, or rather waist, will be retracted or slim, and the abdomen will be tender—often very tumid. The patient will feel a dragging throughout the trunk, and weight at the bottom of the abdomen, which will be aggravated in walking or riding. Sooner or later a fresh paroxysm of the colic will be the result of any effort which shakes the body, and calls upon the tone of the abdominal muscles. The truth is, that in these cases, all of the mechanical derangements, displacements and infringements described in this work, do exist and act, inducing the perpetual recurrence of the disease, which no medicine can cure, but which may be remedied by applying support to the spine and abdomen, as has been fully proved by an extensive practice and observation. I cite *one* in illustration.

CASE 1. Dr. K., of Pennsylvania, was habitually subject to the most dreadful attacks of colic, which would last for days with pertinacious obstinacy and severity. In the interim between the attacks he was feeble, and could only move around with great difficulty. His form was peculiarly that above described, his voice was feeble, his movements careful, his bowels were sluggish, and his horseback exercise was performed always with *some* degree of pain, or sensitiveness, consequent on jolting, besides a paroxysm of the colic was often the result of such exercise. The lace was applied to this gentleman at noon of a day when he was compelled to ride much.

At evening he called to tell me that he was a new man, that

he was invigorated by his exercise, and that he had performed it with ease and pleasure. He said that he could stand up like a *man*, and felt like a man. The dragging at the stomach, and soreness consequent on jolting, were removed, and he felt that he was about to enjoy life again.

In such cases as these there are several reasons why the *lace* will act as an antidote to the recurrence of the paroxysms. Among them are these : first, they are accompanied by relaxed abdominal muscle, inducing a pendent state of the abdominal organs : second, the frequent recurrence of the paroxysms (in connection with the relaxation) gives rise to a neuralgia, or sensitiveness of the visceral tissues, depreciating their powers of endurance. The *lace* removes the pendent state, and prevents the jostling consequent on riding, and thereby the patient avoids the ill effects of the morbid sensitiveness. Indeed, as a travelling accompaniment for corpulent or delicate ladies and gentlemen, the *lace* has been found to be invaluable, preventing that fatigue and weariness which so nearly wears out the feeble.

Influence of the Lace during Pregnancy.—This period, so full of interest to mankind in general, and especially so to the subject of it, it is well known, is beset with a full share of troubles, so that it may well be called a *journey* over a thorny road. Among these troubles are, pain and weakness of the hips and limbs, from pressure on the sensitive and ligamentous tissues ; pain in the back, with great weakness ; also a darting sensation up the spine into the head, inducing confusion of mind, dizziness, ringing of the ears, and strange feelings, threatening fits, from irritation of the spinal nerves, and compression of the *vena cava* and *arteria innominata*, or main arteries and veins of the trunk ; cramps of the abdominal muscles ; pain, weight and distension ; costiveness and urinary incontinence or retention from compression of the *rectum* and bladder or its stem ; finally, varicose veins and swelling of the limbs from compression of the lymphatics and veins in their ascent.

These, in their combination, wear out the patient, induce abortions, or make life a terror. They have hitherto been treated by cathartics, paregoric, and the lancet. In my practice I have bled my patients nearly to death to prevent their dying, when they absolutely were suffering for want of blood, and were likely to need it still more in the hour of and period after parturition, or labor. I have given cathartics and laxatives, turning the stomach upside down, and wearing out the sensibilities, when the cause was mechanical, and not under the cognizance of medicine.

Now it is evident, that the cause of most or all of the above and other complaints of pregnancy is mechanical, and that distension, weight and pressure, make up the constituents of

this cause. It is also obvious, that the *lace*, by its uniform, gentle pressure, will tend much to remedy, or at least to mitigate these sufferings. I entertain gloomy contemplations for the female sex, when I reflect on my own and others' practice in these matters, and the amount of loss and suffering which bad practice or neglect brings, and is likely to bring upon so many thousands. I believe that thousands of abortions, still-born children, bad labors and deaths, might be prevented by a judicious application of support to the abdomen. One moment's reflection will show how it is that the *lace* may remedy these sufferings.

I shall detail two cases illustrative of the truth of this position.

CASE 1. Mrs. B. was on her *journey* with her second child, and in her seventh month. She had suffered exceedingly for months, with obstinate constipation and its effects, great weakness of the limbs and pain of the back, with strange sensations running up the spine, entering the head and "*sprangling*" out (as she expressed it), making her feel as though she would fall down in a fit; her spirits were exceedingly depressed, and her stomach exhibited every variety and degree of irritation that such patients do. Her cramps were severe. Her hips, she said, would come apart; her veins were very varicose and painful, her limbs exceedingly painful and heavy, and, indeed, she walked by the aid of whatever was in her reach. I was compelled to bleed her often to save her life, apparently, when she seemed destitute of blood. I had reason to fear that she would not survive the journey. At this juncture an inguinal hernia (or rupture of the lower belly) broke out, which compelled me to apply a large truss.

Soon after this application I saw her, and inquired as to the hernia. "Why," said she, "that is gone, but that is the least of all; ever since I have applied the truss, all my pain in the back, head, abdomen, hips and limbs has *gone*; I feel as light as a bird." She flew around, and seemed in an ecstasy. Everything was relieved, and the necessity for my former treatment was obviated.

I never shall forget the reflections which this case brought over me, nor the light that burst in upon my mind, nor the resolutions of reformations and improvements in practice I then formed.

CASE 2. Mrs. J., Ct., was in her eighth month of pregnancy. She was borne down with gloom, derangement of the brain, stomach, back and limbs; her sense of weight was intolerable, and her limbs refused to carry her. It was with great labor that she could walk at all, and faintings were very common, when she attempted a half mile walk, leaning on the arm of her husband. The *lace* was applied, and instantly, as by a

charm, every symptom, so indescribably distressing and inconvenient, was relieved. She informed me that although to even superintend her family affairs was a heavy undertaking, she could now engage in the labor with delight, and without inconvenience. Her husband also informed me, that in lieu of hanging on his arm in a short walk, she could now walk blithely to his father's (a distance of over a mile), without any faintings or fatigue. I feel *deeply* the importance of pressing home this subject on the minds of the people and the profession, not pretending that the lace can do everything in these cases, but that it can do incalculable good, and what *nothing else* can do, and *that* in a most harmless way, saving much strength, pain and vital energy. I should delight to introduce several other cases in point, but want of room forbids.

The Influence of the Lace in Child-Bed.—The puerperal, or child-bed state or period, is not less full of interest or danger than any period or state in female life. Of the puerperal fever and the usual and often fatal inflammatory affections, I shall not speak, but consider the less fatal and more mechanical and philosophical circumstances, their effects, and their proper treatment.

What is the organic condition of the newly delivered female? We remark, that she is now under an entirely new set of relations. She has passed from great tension of abdomen and fulness also, to perfect relaxation and emptiness; from visceral elevation to visceral gravitation, and from great ligamentous extension and tumor to great diminution and relaxation. The *vagina* is also relaxed and dilated to its utmost dimensions, ceasing to sustain the uterus at all. By this we see that in lieu of even ordinary or partial mutual support, every organ within the whole trunk, from the uterus to the throat, has lost its usual anti-gravitating influences, viz., the abdominal muscles, the vagina and floor of the abdomen, and nothing can now control the general and individual descent of all the viscera, (excepting their natural moorings), mutually crowding each other, putting their ligaments upon the stretch, inducing all the effects heretofore delineated, in an aggravated and superlative degree.

What, then, would be the effect of the continuance of this state? I answer, it would be to disable the patient from rising, or if she did rise, it would aggravate this morbid state; for it is most evident, that a rising up of the patient in this state (especially if she be of a relaxed habit) tends to induce a general pulling upon the visceral ligaments, producing a dropping of the womb into the *vagina*; keeping up the whites, and all the effects of prolapsus, such as pain in the back, or *broken back*, weight at the base of the abdomen, displacement, and uneasiness of the abdominal organs, and tension of the

mediastinum, causing a sense of pulling or tightness in the breast, with shortness of breath, and some pain in that region. Also, a palpitation of the heart, distress, or sinking, or *goneness* in the stomach, and many other feelings, too numerous to mention.

If this view of the subject be correct, what shall we say of those patients who neglect or are suffered to neglect swathing, or efficient support to the abdomen, before rising after child-bed?

There is a set of masculine midwives and ignorant *accoucheurs*, who *hoot* at the necessity of supporting the abdomen in that period, because they know of hundreds who have neglected it with impunity. To be sure, they *may*, but the evil day in these cases may only have been *postponed* till later life, or, even if it did not injure *them*, one thing is evident, viz., that the *tendency* is destructive, and that it will have its effect in a fearful number of cases; and it will be admitted by all that one case of our fashionable "*breakdowns*," as the result of imprudence and neglect, is a sufficient apology for care and prudence in a thousand where the reason for it may not seem so imperative.

My experience has been such, in connection with the above physiological view, that I have come to the decided conclusion, that three-fourths of the evils of child-bearing, in after life, on the female constitution, do not grow out of the nature and necessity of the case, but out of inattention to the mechanical relations, and in this, every observing and judicious woman and practitioner will bear me out.

But this neglect has not been universal, by any means, for our best writers on this subject insist much on bandaging or supporting the abdomen, as they call it. But what do they recommend, and what do the thoughtful apply, for the effecting of this object. A towel, pinned around the hips, with a cushion under it, over the lower abdomen. Let us now see how much good and how much hurt this is likely to effect. The abdomen is very flat and flabby, and the abdominal organs lie loose in the abdomen, like leeches attached to the walls of a jar. The towel must be applied low down, to elevate the viscera, and prevent pressure on the uterus; consequently, it must pass around the hips, and they being now higher than the abdomen, of course the latter cannot be compressed by it without a large, heating, and heavy cushion under the towel (commonly this is a small pillow). But, what have we yet effected? Nothing but *compression*, for this bandage does nothing but press the belly back, towards the back, and presses about as much on to the *uterus* as off from it. Furthermore, you get as much and *more* pressure on the back and hips than on the abdomen, all of which is unnecessary, useless, and injurious.

Again: the bandage will not keep its place, slip up, thus

doing often more harm than good. It is well known that the child-bed state is peculiarly disposed to take either a febrile or inflammatory action, which too often cannot be checked, and that the patient must be kept cool and airy;—but what have we got here? A sweating, heating, chafing, irritating, movable thing, which certainly must tend to enhance the chances of inflammation and fever, and excite restlessness, local irritation, and after all not effect the support desired, but leave the patient laboring under the inconvenience and bad tendency of the general relaxation. I have seen so much of this, and of the want of adaptedness to the circumstances in the bandage, and the extreme need of the patient, that I am most deeply impressed with a sense of the necessity of something which will effect the desired object without so much inconvenience and trouble.

I do beseech of the profession, and the people, to give some attention to this mere *nucleus* of *ideas* on this point; for I am persuaded that millions of lives are sacrificed by its neglect, and that an immense amount of suffering and domestic misery from child-bearing is the result of inattention to light, cool, judicious, and efficient support. I shall close this point by the description of a few cases, and leave the subject to the consideration of those interested.

CASE 1. Mrs. B. was delivered of a large boy, and was exceedingly smart, so that she was in the kitchen on the third day. I will here premise, that I had faithfully applied the bandage. The consequence was, that she was confined to her bed for seven days; any attempt at the inclined or erect posture being attended with a most distressing sensation of sinking or faintness in the region of the stomach; or, as she expressed it, such a “dragging, such a goneness, sinking, it seemed as if she could not breathe.” She felt it from the throat down to the hips. She ate continually, and said it was all the comfort she had, “for it filled her up, and relieved the sinking and *goneness*.” She complained of great and insufferable bearing down on the *pubes*, accompanied by the to be expected sense of weight and dragging, or grinding, in that region, and in the small of the back.

Her limbs and hips were agonized much on sitting, or by motion; the head partook largely of the swimming and dizziness usually attending such affections, accompanied with confusion of ideas, and all this was constantly recurring on any attempt to turn or rise. Difficulty of respiration and palpitation were also distressing. Her abdomen was perfectly flabby and pendulous, and the stomach very much retracted. Plasters, bandages and tonics of every variety, and in any quantity, were administered with but a very transient effect.

On the seventh day, in the evening, after a most desponding

fit of crying, she said she believed that a supporter would do her good ; accordingly an imperfect one was applied. She arose to her feet on the bed, and adjusted it (a thing she could not have done previously without fainting). She exclaimed, " There, I am well now." She then stepped deliberately off from the bed with ease, walked to the fire, and partook *cheerfully* of a repast. In three days she rode ten miles to visit her friends.

This case made a deep impression upon my mind, partaking both of joy and chagrin ; for I saw not only the effect in *this* case, in thousands like it, but I also saw, like a *flash*, that the medical world was in the dark, and had made sad work with many constitutions by medicine, when all that was wanting was support to the mechanical relations. I also saw that they would for ever remain so (probably), and leave thousands unrelieved, by improper applications to them. Since then has my heart and pen been devoted to this theme ; and tongue cannot communicate the extent of my success, and the glorious and happy results to the *devoted* sufferer.

Very many other cases have come under my observation like the above, since, though not quite so marked ; and as there is such a sameness in them all I shall deem it expedient to mention only one.

CASE 2. Mrs. L., N. H., had been delivered about three weeks, and was coming up like most other ladies, sitting up most of the time, or dragging round slowly, complaining of want of strength, particularly on sitting or standing, but was told by her doctor that she was getting along *finely*, and was so considered by her friends and by herself also. The lace was applied, and to her surprise she was a *woman* at once. She immediately attended to her own room and child, and was pleased and invigorated by the exercise. Suffice it to say, that all concerned were surprised and delighted. I now close this subject by saying, in all honesty and candor of soul, *try* this remedy, and examine these views relating to pregnancy and the child-bed period, and see if the most happy results do not accrue.

The Use of the Lace in Uterine Hemorrhage and Profuse Menstruation.—This disease, or malady, is sapping the foundation of life daily to ten times the extent we are inclined to suppose. The effects of it are reflex on the constitution, deranging all the functions of the body, enervating the digestive powers, the nervous system, the muscular system, and deranging the mechanical relations, of which we have treated in this work. It is also a malady that does not acknowledge the specific or universal healing agency of any article or class of remedies, and hence for this disease the patient often spends years in a fruitless routine of practice, while the effects of the difficulty are

marching on, all the time, until the patient's constitution is undermined. She is then supposed to have every disease to which woman is heir, and receives *treatment* for about as many, when, at the same time, there is an identity in the cause and perpetuating agency of the whole of them. The truth is, that in some cases, where the patient seems to be bleeding into the grave, all debilitated, it is estimated a case of *general debility*, and thus treated. But tonics excite headache and fever, and aggravate the difficulty, thus showing that although the patient is being exhausted by a draft upon the fountain of animal life, yet it is not *originally* debility, nor to be cured by strengthening remedies, being only enhanced by them. Thus we learn that the debility is in *these* cases an *effect*, and not a *cause*.

There are other cases where the same diseased phenomena are exhibited, that are relieved directly by tonics, and remedies having a specific influence on the diseased functions of the uterus. These different cases show that there is a *variety* in the cause and character of the malady and proper remedies. We now proceed to see if we can discover any means of accounting for the variety or difference of success in the treatment of this insidious destroyer of the fair portion of our race.

I would request the physician and the patient first to examine the form, both with reference to the present and the past, at or previous to the attack. First, then, what is it now (and we will suppose the patient to be a real *subject*), and what has it been? Is it not like fig. 4, more or less? Are not the *uterine* organs depressed by the abdominal viscera? Are not all the organs pendent, in lieu of being supported, and, of course, are not their functions either exalted, depressed or modified by this breach in the mechanical policy? Do not these coincidents between the symptoms and the tangible relations and conditions of the system argue something worthy of consideration? Do they not point *really* to some rational conclusions and inferences in the pathology of *some* cases of uterine hemorrhage and profuse menstruation? Is not this state calculated to produce a debility in the nerves of organic life (in the uterine organs), by continually pressing on them, stretching their connections with the surrounding parts, and irritating the nerves, which are distributed to and preside over their functions? Will this state not also irritate the relaxed and debilitated parts, inducing that unmanageable set of effects which are the results of irritation and real debility; and will not these effects tend to perpetuate both themselves and the cause, or in turn act as causes, and thus induce an endless train of destroying evils? Even let the primary cause be what it may, will it not induce the state just spoken of (morbid mechanical state), and will it not, though it be only an effect, generate all, and stand in the way of the removal of the primary causes and

their effects, until the machinery is replaced. Thus far we have only treated this point in the light of analogy, and we beg of the reader not to spurn the inference before he has fully considered it, by reflection, observation, and experiment.

I now take another view of this point. Let us look at it in the light of *facts* and *experiment*. Suffice it to say, in *no* instance in which the *lace* has been used in habitual uterine hemorrhage has it failed of producing the most decided advantage to the patient, in a general point of view, and ordinarily in the local affection also; for it is a fact that about all such cases are not only afflicted with the difficulty under consideration, but also with the whole host of other affections previously treated of, which are the natural result of the relaxation and physical derangement. I *repeat*, that almost all of the cases of hemorrhage and profuse menstruation are accompanied by the inverted relations of the truncal organs, to a greater or less extent. I know that some are emaciated, and seem not to have abdomen enough to gravitate, and hence we may not observe in them that palpable morbid and inverted shape, as in fig. 4 and the other marked figures. In reply I would say, that it matters not how much or how little this descent exists, so that it really *does* exist to *some* extent. It is sufficient to show that there is a change from *support* throughout the trunk, to the *lack* of it throughout the same; for when the most inconceivable morbid or unnatural change takes place in an arrangement whose susceptibilities are presided over by nerves, there always *must* ensue *some* degree of suspension, exaltation, or modification of functions, either locally or generally, and perhaps both.

Very many are the cases upon whom the lace has been applied, of which I have kept no journal, and whose names are gone out of my mind; but I do distinctly recollect their history, and that success always followed. I will only speak of the following.

CASE 1. Mrs. P., of Pennsylvania, aged 45, mother of a large family, was for nine years afflicted almost to death with flooding, or rather a mixture of profuse menstruation and hemorrhage. Sometimes the attacks were *very* sudden, and threatened instantaneous death, and would last for three or four weeks. She seldom passed more than three weeks, and often not more than one, without its recurrence. In connection with the wasting away (which occupied the anxiety and attention of both the patient and practitioner), there were all the morbid effects of general relaxation. Her nervous difficulties were extreme, and dyspeptic ones also. Constipation of the bowels was constant and *very* obstinate, defying all the ordinary means of relief. She could walk (sometimes) a half a mile per day, but *generally* was confined to the house, if not to the bed. Everything in the form of local and general treatment was tried,

and tried again, but with nothing but a transient temporizing effect.

It now being nine or ten years since her affliction commenced, I applied abdominal support. Suffice it to say, that her spirits and strength *immediately* returned, and in one week she rode *daily*, several miles, and one day *walked* the distance of three miles. Her attacks ceased to be *much* too frequent, and were not as severe. In short, she was a new woman.

This case taught me much, and led me to see that more was yet to be discovered, and that our curative efficiency lay in very simple principles, and their application to the system. In this case, the wheels (or parts) were all put in their proper place and apposition; this being done, the nerves became quiet, especially the nerves of organic life, whereby the obstructions to the action of the vital energy were removed, giving nature every chance to carry out her wonted intentions.

Leucorrhœa, or Whites.—This malady does its full share in destroying female health and happiness, both by its unfortunate universality, and its destructive tendency. No age is exempt from it, and no internal remedy has hitherto been found to be specific for it. I shall not describe this affliction, but proceed to ask who they are that are afflicted by it? Experience answers, that they who are subjected to it, almost *always* are more or less afflicted by *prolapsus*, pain in the back, laxity of muscle, nervous susceptibility and enfeebled energies of body. In short, they have more or less of the form of figure 4, and complain of most, or all, of the effects growing out of that form.

These facts and coincidents should lead us to suspect an identity in their cause and progress. But this view of the subject has seldom been taken, and it has more commonly been viewed and treated as a primary disease. Hence almost every variety of treatment has been adopted for its relief—the most *potent* drugs and with very doubtful success. I will, however, here remark, that there may be many causes, primary or secondary, which may produce, or keep up, leucorrhœa, aside from that which I am about to explain.

But to the question; What is the cause and philosophy of leucorrhœa? Let us see. We *generally* find that prolapsus precedes and accompanies it, to *some* extent at least. The prolapsus implies a depression of uterus into the vagina, as before shown. Of course, then, there will be of that organ an enlargement, a relaxation of its pores, or exhalants. It also will induce an exhaustion of the elasticity of the texture of the vagina.

By this means an irritation in the vagina is kept up, inducing a mock suppuration in the form of leucorrhœa; this will soon act as a cause of *itself*, and an aggravation of the pro-

lapsus. I appeal to the recollection and experience of the profession, and those afflicted with these difficulties, if they have not found, that in three-fourths of these cases, these symptoms do not accompany each other, and if they do not find the increase, or decline of one, always or generally corresponds with the same position of the other? Again, the present history of the female health, from twelve years of age and upwards, is also the history of this disease; for few are the young who are not afflicted by it, and who are not *drooping* under its influence. I know them when I see them, if they apply for relief. You find that they are weak, have pain in the limbs, back and hips; that the appetite is capricious, the stomach more or less weak, and that all the physiological derangements heretofore described are evident.

Now, in view of these facts and coincidents, and in the light of *common sense*, I ask what are the indications of cure or relief? Are they founded in internal or external treatment, operating through the recuperative powers of the vital susceptibility? Or are they to be found in mechanical support, as taught throughout this work, replacing all the parts, restoring all the relations, thereby removing all obstructions to the vital force and function? Surely the latter is the true indication, when the said mal-relations do really exist as cause or effect.

I have been very conversant with this affection for many years, and have been pressed into the use of all the ordinary treatments and remedies for it, and *never* found *more* than dubious good produced, and *that* very temporary. The *tincture of litta* was among the *most* successful of them; the next tonics. The first operated by its counter irritation, exciting a revulsion, changing the action of the exhalants of the *vagina* for a time. The second operated by giving general tone to the fibres, thus doing what it *could* to replace the parts by the increased vigor of the fibres concerned in maintaining the due mechanical apposition. All of these good effects are, and will be, but partial and temporary, should you not succeed in effecting a thorough reformation, or *renovation* in the general tone.

Within the last three years I have had great experience in the effect of judicious abdominal support in this malady: I found, that in making use of my *lace* for prolapsus and other diseases, of which I have spoken, many patients spoke of the perfect relief experienced from the *leucorrhæa*, which, at first, I did not understand; but the frequency of the above occurrence drew my attention to the subject, and led me to my present pathology of it, and, of course, to see the *modus operandi* of the curative agency of the *lace*. I now have it to say, that no more than one or two cases that have come under my obser-

vation, and the use of the *lace*, have failed to be very essentially, if not permanently relieved.

Should this view of the subject be correct, of what vast account is it to the world, seeing that so *large* a portion of it are *early* undermined and oppressed by it, the whole powers of health being sapped thereby? My feelings on this point are so impressive, that I am called upon to urge a *hearty* consideration of this subject upon those who see themselves beginning to be afflicted by this malady and its concomitants. The cases are so numerous, and the cure has become so much a matter of course, that I have failed to charge my mind with particular names of patients. I proceed to specify two or three, which may be considered as a *just* representation of the whole. Let not those who are aware of the *approach* of this insidious monster, wait till they are broken down, or till they are compelled to *do* or *suffer* (for that time will surely come), but arrest it, and prevent the necessity of a great *restoration*.

Many people strangely think, that if they can go *about*, 'tis folly or madness to do anything remedially, and thus pave their way slowly with abundant sorrow, and have the satisfaction of soon experiencing *real* and ample cause for attention to health.

CASE 1. Mrs. W., of Pitts., Pa., aged 31, had been for years afflicted with *leucorrhœa*, to a ruinous degree; her strength and spirits are gone; her countenance became sunken and dejected. She was continually indisposed to move, and spent her time in weeping. *Leucorrhœal* discharge was continual and abundant; in short, she was but a wreck of what she had been, desiring to die, and refusing to be comforted. The *lace* was applied in her case, and in less than one week she informed me that she was relieved of the malady, and that the change in her body and mind was surprising; indeed, it was obvious to all who looked upon her. In the short space of one week she superintended the female department of a large public-house.

CASE 2. Miss F. J. (unmarried) was a case nearly similar to the above; her whole surface had become blanched, cold and leaden; her limbs weak, tremulous and painful; her countenance dejected and despairing, and her form bent like fig. 4. All her former life and sociability were gone, and a kind of gloom and despair overspread her, in her appearance and in all her intercourse with the world. The *leucorrhœal* efflux was extreme and continual, until at length she was unable to bear the motion of a gentle carriage, and even to walk across the room, without a continual tendency to fainting. Palpitation of the heart and dizziness were among the very troublesome symptoms. This lady applied the *lace*, and within one week after its application she informed me that not only

were the effects of leucorrhœa, but all the symptoms just enumerated, relieved, and that the leucorrhœal discharge itself was dried up; this has been permanent in this and the other cases.

CASE 3. Mrs. G., Pa. (married), was an extreme case of leucorrhœa, for which I had given powerful doses of tincture of lytta, the terebinthimates (the turpentine preparations), and all other remedies of rupture for this complaint, but with no *real* advantage. I will simply say that I will let the description of the above two cases answer for the description of this. The lace was applied, and the effect was instantly such as was expected and desired.

I now leave this part of the subject, after invoking the attention of mothers to the health of their daughters, and begging them to *remember* that they must *prevent* the first invasion of disease upon them by a careful training and timely attention to proper exercise and support, to be used as convenience or necessity may require, before the "evil days" come. Let the daughter also use freely the cold douche in the morning, the warm salt bath in the evening; take exercise freely in the open air, and in domestic labor. Let her, if *this* is not compatible, jump the rope, romp freely, and practise daily and regularly in calisthenic exercises. I particularly recommend the female gymnasiums. But, after all, such is the state of society, and so slack are all in *systematical discipline*, that they *will not* do anything effectually in this way, and I therefore expect the principal advantage will be derived from the occasional use of the lace, keeping it on hand, as an appendage of the toilet, and used as any other article is used, viz., as circumstances require.

Edema, or Swelling of the Lower Extremities.—It is very common for people, both *male* and *female*, to suppose themselves threatened by dropsy, on account of the swelling of the feet and legs, and they undergo great distress of mind, and severe treatment on the account and for the relief of it. Now, this *may* be real, and it *may not*. I am bold to say, that unless there are unequivocal reasons from the other parts of the body to substantiate this supposition, there is no call for so much fear or for such active treatment. However, the patient can have no unfailing rule for a guide, and must be alive to all the facts and philosophy of the case. If there is a gravid state of the uterus, or tumors of weight in or on it; or if the patient be like, fig. 4, and complain of the sensations which result from such a form, then I say that we need not fear dropsy, especially if we find the limbs well, or nearly so, in the morning, and gradually growing worse from morning until night.

The pathology of such cases needs but one word in explanation to be fully understood and appreciated. The weight of

the truncal organs, pressing upon the vessels which convey the transparent fluids up into the trunk, prevent the ascent, and of course induce an engorgement of it in the limbs, which is relieved on resuming the recumbent posture; or, in other words, on taking off the superincumbent weight.

I shall not stop here to cite cases, as they are so common, but will simply say, that very many are the cases of this affliction that have been relieved by the *lace*, although it was *applied* principally for the relief of other complaints.

Varicose Veins.—Very many are the patients who complain of varicose (enlarged) veins. There are very many causes which induce this malady, and each cause needs attention according to the nature and extent of its operations, and *no one* remedy will relieve, when it is not adapted to the peculiar cause of the complaint. It is evident that in the case of a general relaxation or a gravid state of the uterus, that the veins must be compressed, and the blood thereby be obstructed in its ascent into the trunk, thus occasioning an engorgement in the veins. I was first led to reflect on this in the case of Mrs. B., who was in her eighth month of pregnancy, and who was exceedingly troubled with varicose veins, which were relieved by the application of the *lace*, applied for the relief of other specific inconveniences of pregnancy. I have had no particular experience in this matter in ordinary cases, but am led to conclude that if abdominal support is applied (especially if the form and feelings of the body indicate it), before all the elasticity of texture of the veins is overcome, great benefit will be derived, if not a cure. At least, it will afford a great aid to the bandages and other proper means used for those cases. I recommend this *idea* to the immediate consideration of the profession.

Obesity or Fatness.—It is evident to all, that great increase of flesh or fat must increase the burden for the limbs, back, and the abdominal walls to bear, and that they who are loaded with this substance must feel the burden at the abdomen, as well as on the limbs. Such people feel considerable indisposition to sudden emotions, in consequence of the jolting of the viscera; in such a case complaining of weight in the lower belly and tenderness of the stomach, or in its region. Such people are especially incommoded in travelling or journeying, and are exercised, at night, with great fatigue and general soreness, as if the parts had been bruised.

In several such cases I have applied the lace with the most gratifying success. Its *modus operandi* must be obvious to all, and relief in such cases be expected.

There are many cases that have come under my observation illustrative of this view of the subject, which I shall not take time to detail.

The Use of the Lace on Subjects predisposed to, and afflicted by, Hernia or Ruptures.—At the lower abdomen, on each side of it, are two openings in the abdominal walls, through which pass certain cords, in both sexes, and these apertures are liable to relaxation or distension, by various means, whereby the bowel is made often to protrude like a sack, and produce a *hernia*, or *rupture*. This malady has many degrees of severity, and is often fatal, *always* rendering life very comfortless. The question is, what causes the enlargement of the ring and the protrusion, or any degree of protrusion? It must be some force acting on the ring or opening, and sure it is that the ordinary weight of the abdominal contents, and the sudden descent on lifting, coughing, running or jumping, is that force; thus we see that their pressure is the cause and their protrusion the effect. The cause being within, and the effect without, the two following points next present themselves for consideration, viz., what will obviate the difficulty itself, and what will remedy it? These questions must be answered in the light of philosophy, and the operation of the cause. With reference to the prevention of the difficulty, I would say, that as it is the weight and encroachment of the organs against the ring that brings about its dilatation and the protrusion, of course the antidote will be to take and keep off the weight of the bowels from the weak part; and surely if this be effected, how can there be protrusion any longer?

This cannot be done but by applying support to the abdominal muscles. Indeed, it is as evident as the light of day, that almost no cases of hernia would occur if in infancy and other periods of life, the dress were properly applied, so as to lift up the organs instead of pressing them down. In connection with this remark, I will just observe, that it is a curious fact, that in old times, and no *older* than sixty years ago, hernias were very rare, and it is well known that in those days the *pants* were worn without suspenders, and were cut low, so as to bring the hip-band *below* the bilge of the abdomen, affording for the whole mass, and the abdominal rings, a support, in reality removing the distending and protruding influence of the abdominal furniture. If there is any truth in this reasoning, what sort of a comment is it on the modern fashions of both male and female dress in this respect? These remarks will lead the reader at once to see that persons of weak and lax habits should support the lower abdomen, covering each ring, and raising upward the whole visceral mass; and also that thereby, *many* of the terrible cases of rupture might and would be avoided.

In reference to the second question, How shall the effect of protrusion be cured? I would say, in short, that the foregoing remarks and views have *already* answered the question. But to make the view more impressive, I will ask, Which will the

most effectually relieve and prevent the protrusion, to *plug up* the ring, or to support the whole mass, and prevent the extreme pressure *on* the rings. That is, shall we put on a *truss*, whose pad is convex, and tends to separate the walls of the ring, and only relieve by operating like a tap to a barrel of liquid, or shall we apply a uniform support to the abdomen, covering the rings, and elevating the whole mass, relaxing the muscles so that their texture draws them into due proximity? That the latter course should be pursued is too obvious to need a word on the subject. I then unhesitatingly say, that the use of the *lace*, with a properly formed and adapted pad, will *prevent* many ruptures where there is a predisposition to them, and has *relieved* many ordinary ones. Bad ones it cannot; but in this case, where special pressure on the rings is required, it should be combined with a general abdominal support, to relieve as much as is possible the general weight, and lessen the demand for *special* pressure on the hernial rings.

My experience is *full* on this point, and many cases attest the truth of these positions. I therefore advise those who feel increasing weakness in the lower abdomen, and some prickling pain, to be alarmed for the approach of a rupture, and apply a *lace*, in which case it *probably* never will actually occur. Let those who have ruptures apply a *lace* with a large front pad, and then apply the hernial pads over the front one, and let *them* come a little below the large one; by this means both *general* and *special* support is rendered. To this end I have constructed a set of pads and springs, which efficiently apply to every variety of rupture, not interfering with the common arrangement and application of the *lace*. One spring is long, passing into the groins, where occurs one of the most difficult ruptures to keep reduced. It can be shoved along the main spring from right to left by turning the screw to the clasp; and the pad can be moved up or down by means of a slat at the lower end of the spring; so that we can have the pad where we please and of what shape we please, without affecting the bearing or position of the main-spring. We can have what strength or pressure we please, by increasing the stiffness and curvature of this little spring.

CASE 1. Miss G., a young lady in Pennsylvania, had been confined five years to the house by a femoral hernia, or rupture in the groin. The sac, or protrusion, was near the size of a goose egg. It required considerable pressure to return it, and, on removing the fingers, it would protrude again with force. In this case *every* variety of truss had been perseveringly tried to no effect. The surgeon one day remarked to me, that if I could make an instrument that would cure femoral hernia, my "Jack would be made," and stated the case of this lady. I at

once conceived the idea, and on second trial, succeeded to a charm.

For *ventral hernia* (or rupture of or at the navel), the *lace*, in connection with a spring and pad running from the main-spring, in front, and upwards to the navel, will, and must, be efficient in relieving it, as we may have the pad large or small, and of any shape, the pressure hard or gentle, just as we please, without moving or interfering with the main-spring, it, all the while, sitting like a saddle, unmoved, and supporting the trunk.

If there is the common rupture in one or both of the sides of the lower belly, then one or two springs, just as is necessary, can be dropped from the main-spring over the front pad, with small pads on their lower ends, to press firmly on the rupture, and assist the large pad.

By this arrangement, if it is perseveringly carried out, and with discretion, we cannot fail of succeeding, as we can command any *amount* of power, and any *direction* of force, without moving the *main-spring*, and this cannot be done in the case of any other instrument now in use.

Again, in common trusses there is but one pad or strap behind, giving irritation, excoriation and uneasiness, allowing the front pad to rise up or fall down; but in taking the *lace* for the foundation of every truss, we have not only one pad, but four, with three other redeeming qualities, viz., they divide the pressure into four points, they are moveable every day, and they present a broad and large surface for pressure, acting as a steadier, or confiner, to the front pad, preventing its rising or descent.

Again, none of the springs or pads press on a bony surface I believe the time is at hand when the *lace* (so far as it is made known to the faculty) will be the instrument used both for general support and as a foundation for hernial appliances, affording as it does, or may, more advantages than any other, and avoiding all of their disadvantages.

But for those who are threatened with ruptures, the *lace* is a perfect defence, and of immense value. Especially in children will it be of great use (when they are weak and lax in fibre) in preventing rupture.

Prolapsus Uteri.—As this disease has become so common and general, both with the young and unmarried as well as with others, and as so few dream of the true nature of their difficulty, and of the requisite remedy, or of its necessary application, I will give a succinct description of the malady, leaving out many of the associated symptoms which usually accompany, and which have been portrayed and explained in the different parts of this work.

Generally, the complaint will come on by degrees. The patient begins to lose her powers of endurance, more and more,

the back begins to ache before noon, or night, and this may exist in every variety of degree, even to terrible pain, wrangling and twisting, and making the back feel as if it were broken, or pounded or drawn. This is generally in the region of the kidneys, or small of the back, and may be distressingly severe in the *sacrum* (or *rump* bone), low down, feeling like a pressing, bearing down, or dragging. The patient also will feel a sense of dragging in the groins, a twisting and wringing, which, in connection with the sense of weight, or pressing, at the base of the belly, renders the sufferer often so miserable, that she sits down in the midst of her cares, and cries out in anguish and despair. She moves carefully, and holds herself with the hand at the lower part of the body, to prevent being jarred or jolted. She walks bent over to avoid that dragging in the breast, and *goneness* in the stomach, which is such a constant attendant on this affliction. The limbs will often experience cramps, or spasmodic movements, and the *hips* also attended with severe pain. There will be great wrangling sensations in the limbs, as though the flesh would cleave off; or this may alternate with numbness, or prickling sensations. Although she may be somewhat smart in the morning, or on certain days, yet the limbs generally will, by noon, become heavy and clumsy, and move painfully; the patient will feel as though the hips were loose, and that brisk movements would be attended with injury, and great displacement of the internal organs. Whites and costiveness will usually attend the above troubles, and also swelling of the feet and limbs, ever and anon.

These, and other symptoms not here mentioned, may and do exist in endless varieties of degree; more commonly in a moderate and durable degree, so that the patient *can* go about attending to her ordinary avocations, but suffering more or less.

This is especially the case with those *young ladies* who are ignorant of the true character of the complaint, and know only how uncomfortable they are, and *not* how much they need support, nor how much they are undermining their constitutions, and unfitting themselves for future usefulness. While on this point, let me say to my young female readers who feel that they are beginning to come under this description, do not deceive and abuse yourselves; you conceal from both *mother* and doctor the facts, because you suppose that such afflictions usually belong to the *connubial* state, and that, should you make known your true state, wrong impressions as to your chastity and *purity* would be entertained. It is not so, my young friend; this malady is not of local origin or perpetuity. It is *not* the least indication, one way or the other, on the point conceived; it is but the result of a relaxation of the mus-

cles and ligaments of the trunk generally, which is as likely to afflict the *young* and chaste girl, as the *old* or married woman.

Then cease to abuse yourselves on this point; fly to relief early, and arrest the stealthy destroyer with a light, cheerful and innocent heart. Do not delay it till you are *compelled* to act, and have thus rendered the hope of success more dubious.

Let me urge you to turn back to the preceding part of this work, and read the remarks on the physiology of the pelvic organs; then you will be prepared to go along with me in the following directions and argument.

You will recollect that this organ enjoys more support than is provided for the liver, an organ of twenty times its weight. You will recollect that this great strength is designed by nature to assist in sustaining the abdominal contents and the weight of the womb in the four first months of pregnancy. Of course you conclude that the cause of the falling was pressure above, and not want of original ligamentous power to sustain the uterus. Of course, then, we conclude that support applied below did not apply to the cause, and was neither philosophical, physiological, pathological nor successful. Therefore you are prepared to see that we advise all such patients to apply a *lace*, and thus take off all *pressure* from the womb, leaving it to rise by the returning strength of the relieved natural uterine supports.

Here we have come to a controverted point, and the controversy lies between the comparative curative merit of the *pesary* and external support.

We will give our treatment of this complaint, and then attend to the objections urged against it.

In every complication, variety, or degree of this disease, we advise the immediate, judicious application of the *lace*, with a strength suited to the peculiarity of the patient. Let it fit neatly, and feel perfectly comfortable, or else exchange it for another. Be careful not to wear it too long on its first application, or you may become irritated, made sore and restive, especially if there be tenderness of the abdomen; use at first a gentle instrument, and at intervals; and by prudence, and the use of the *lace* and the following means, the patient will recover health and spirits. As there will generally be manifest a diseased condition of the chest and abdomen, as well as of the pelvis, it will be requisite for her to use faithfully the means laid down for their relief, viz.: She must be in the daily habit of brushing the abdomen and back thoroughly. Let her knead or shampoo the abdomen in an upward direction, increasing the force as she can bear it. Let her commence taking moderate exercise in a carriage, and increase in activity as the powers of life arise. Let her cultivate the habit of constantly sitting

erect, and throwing back her shoulders. Never let her lace her waist at all. Let her rise early and take the air, and to retire early will be of advantage, and if she obtain her own consent to lay aside her tea and coffee, she will be much the gainer. By pursuing this course, in conjunction with common prudence, every patient will be restored from a confinement of even many years, to perfect health.

But here we are met with several objections to our prescriptions. They also come from sage personages and grey heads, whose authority it is in general not very safe to deviate from. We will honestly state the objections below, and answer them just as conscientiously as we state them.

First, we are met at the threshold, and told that our pathology of the disease is incorrect, that the complaint is caused by a weakness of the uterine supports, and that the round and broad ligaments do not act as a support to the uterus. Now, concerning the assertion that the malady does proceed from primary weakness of the ligaments, we only refer you to our anatomical remarks, and to this fact, that taking off abdominal weight always will relieve the patient.

Secondly, as to whether the round and broad ligaments do support the uterus perpetually, we say that reason pronounces this attempt to show that they do not, to be more ingenious than useful or wise. We have only two reasons to urge in support of the fact that all the uterine ligaments constantly assist in sustaining the womb. First, when I see a body suspended in space, and attached to several firm and fixed points, by one or more ropes or tissues, my common sense tells me that they are all concerned in the support of that organ or body; some may yield *more* support than others, but they will, in their place, be considered as the suspensory powers of that body. But *especially* will we be drawn to this conclusion, when we can see no other important function for these connecting organs to perform. But again, if these organs were not designed to be the perpetual and proper supports of the uterus, why is it that the descent of this organ is generally attended with the dragging pain in the groins, where the round ligaments are inserted? and why is this general relaxation so universally accompanied by that dragging, grinding pain, and weakness in the lumbar region, the very region where the broad ligaments are dispersed? There can be no other reason than that these ligaments are put upon the stretch, and their insertions are the extreme points of resistance, producing these peculiar feelings that are diagnostic of a mal-position of the pelvis and abdomen.

The next objection is, that external support does no good, that it presses as much *upon* the uterus as it presses *off*, and that they have seen these supports do mischief.

In reply to this, we say, that most gladly would we rest this point upon facts, for the profession and the world to judge; but as it cannot be brought universally before the sense of either the profession or the people, we return to the physiology of the human system. The point to be settled is, if prolapsus proceed from the superincumbent weight of the bowels, can any external support relieve this pressure? We say that most assuredly it can, as is proved by a multitude of facts corroborative, and by physiological points. First, it will be remembered that the posterior floor of the abdomen, or brim of the pelvis, is very considerably higher than the pubes, or anterior part of the abdominal floor, or brim of the pelvis. Consequently, the peritoneum, or lining membrane of the belly, that is stretched across the brim of the pelvis, forming the floor of the abdomen, is much higher at rear than front, and looks obliquely forward and downward, like one side of the roof of a house. Hence we see that this form would facilitate the pad of the *lace*, which lifts upward and backward—in getting between the floor and the bowels, and allowing the latter to rest upon it.

But here again we are met with another objection, to wit: That the weakness of the *muscles* is not the cause of the mal-position, but that it is a relaxation of the *ligaments*. That the latter is not the fact, is proved by the invariable relief to these complaints by the application of pressure upward and backward. But again; if judicious pressure, imitating the action of the muscles, will not relieve the patient, then we are placed between the horns of a difficulty, as we will now clearly show.

It has been admitted, that the natural action of the abdominal muscles, when in health, and all acting in concert, is upward and backward; it is also admitted, that they are the actual organs that do support the viscera, and perpetually preserve their determinate form and position. It will of course then be admitted, that the more healthy and elastic these organs are, the more perfectly will they effect this perpetual elevation and protection of the pelvic viscera. Now, if this be the case, the inverse ratio of strength and activity of these muscles will be attended by an inverse action on the viscera, to wit, gravitation, thus proving that a relaxation of the abdominal muscles will act as an exciting and perpetuating cause of prolapsus. But again; if a judicious upward and backward pressure be applied, and produce as much pressure downward as upward, then of course, by parity, the more healthy the abdominal muscles are, and the more active and elastic they are, the more will they tend to produce prolapsus, by pressing part of the bowels more forcibly on the uterus. The conclusion is a fair one, and necessarily compels us to decide that a relaxation of the abdominal muscles may be the cause of

prolapsus, and general malposition of the abdominal and pectoral organs, and that external support, like that supplied by the lace, will relieve these effects; or else, that the more healthy the muscles of the abdomen are, the more perfect will be the prolapsus. This latter conclusion would be so ridiculous, that no one would consent to its tenability. But we are met here by another objection of a very *grave* character, which has an actual existence in theory, but not in practice, in the case under consideration, to wit; it is admitted, say some, that external support does give immediate relief, but that it does it in an unscientific manner, and in opposition to a known law of the vital economy; i. e., they say, that a temporary relief is gained at the expense of a permanent evil; to wit: that if you do mechanically or artificially perform the function that an organ should perform vitally, you will *increase* the torpor of that organ; its stimulus for action being withdrawn, it will rest on the support, and finally lose its tone entirely. This is physiologically and theoretically true, and in accordance with a law of the human economy, and when applied to muscles in health, as when the farmer or blacksmith lay by their calling, and bandage their muscles up to support their bodies, and take no exercise, they will dwindle, and become weak; or if you apply support to a patient, and compel him or her to take no exercise to strengthen the system, and give her not the advantage of every invigorating circumstance, of course the present relief will be followed by the effect stated in the objection. But in the present case, the situation is far different; we come not to a well person, *but a sick one*, who is laboring under both local and general muscular relaxation, and its effects; these effects have become very aggravated, and now both the effects and the cause co-operate, enfeebling the patient very much; so much so, that the very exercise that is calculated to relieve her (even the most gentle carriage exercise), aggravates the difficulty, and increases the patient's misery; and that too, just in proportion to the effort she makes. The fact is, she is *ineligible* to those most efficient natural curative means, and something must be done to give her the advantage of the means that nature has pointed out to relieve her. Now, how shall we do this? Common sense says, bind her up, that she fall not to pieces; hold her comfortably together, by imitating the primitive relation, and by this means she will bear to be moved briskly into the air, and into society, and soon will endure bodily exertion, and unconsciously will find every fibre gaining tone.

But again, the well ones, say you, will get into a *habit* of wearing it? What would our patients say to us, were we to address them in the following language, which is the spirit of the scientific objection? This is it. My friend, you now are

laboring under great distress, and *have been* for years, in consequence of a loss of vitality and energy in some of your organs, producing general displacement of all the organs of your trunk. You have been thus ill for a long time, and I, among others, have tried my utmost to render efficient relief, by pessaries, tonics, anti-spasmodics, and all other remedies that *promised* relief; but I am compelled to say, that my resources are exhausted. To be sure, I know of a very simple and comfortable remedy, that would afford instantaneous relief to you; relieve your spirits, relieve your pains, and enable you to exercise, and go into the air, and into society, and while you use it, almost make you forget your troubles. But I must warn you against its use, for there is great danger of your getting into a habit of depending on it, and finally can't go without it.—Now considering that she has for years had *nothing but a habit of enduring pain*, and no prospect before her but to keep that habit, having been kept *scientifically sick* all this time, and all this in sight of comfort, only for the danger of the habit of being *comfortable*,—what language would express her indignation at this savage, scientific inconsistency? Or if a patient, convalescing from an intermitting or remitting fever, had got able to walk into the invigorating air, by the aid of a cane, should be told, Not so; you must wait till the powers of the system are able to carry you, or you will relax your weak muscles by depending on your cane, depriving them of the stimulus of exertion; you will also get in a habit of using it, and lasting evil will be the consequence. Who would not be indignant at this? or who would father such a position? Yet the opposers of judicious abdominal support do actually lie under the same dilemma. But they *say* they do not, as the cases of the most protracted prolapsus are *not thus* ineligible to exercise, even without support. We say they are; and the perpetual sighs of millions continually say that they are; and common observation says they often are; and anatomy says they may be; and the success of the lace, in relieving the oldest and most obstinare cases of prolapsus, proclaims the childishness and obstinacy of those that oppose this simple and mechanical means of relief; opposing it simply because facts run contrary to sainted antiquity, high names, and the speculations of science. These things are very pretty, but they cost too many lives, too many groans, and too much suffering and pain to be any longer cherished. O that I had the power of tearing away the hypothetical veil, and of showing in captivating relief, the full ranks of facts, as they have occurred in the world, in opposition to the usages of former writers. We now assume the *offensive*, and proceed to *prove* that these last objections are *futile and reprehensible*.

What is the course and view of those who advocate the

objections just attended to? It appears to be this; that prolapsus is a primary disease, existing in the uterus or its ligaments; and that all the attendant affections of the stomach, side, heart, lungs and head, and in fact the whole nervous system, are the result of sympathy, and not of natural and tangible causes, as explained in our physiological and pathological remarks; consequently they say that it is a local disease, and that the remedies should be applied to the seat and origin of the complaint; and that as descent of the uterus is characteristic of the complaint, of course, to elevate the organ, is the true indication. Of course, then, the only means of elevating this organ is to place a prop below, to sustain it, thereby carrying it to its natural position. Indeed this has been the practice for many years, and extolled by the loftiest heads, and proudest names of the profession,—and in many cases, where the case was not aggravated, or of long standing, or accompanied with general torpor, or atrophy of the muscles, this means, in conjunction with invigorating constitutional remedies and exercise, has done much good; but this does not prove its expediency or validity; and as we proceed, we will show that the probability is, that it has done more hurt than good in the point of health, to say nothing of other objections to its use, which we will attend to. Now if this be correct, efficient, and scientific practice, let us examine into the condition of things. First, the objection to our supporting the viscera by mechanical means was, that it tends to weaken the powers of life, by doing *mechanically* what should be done *vitally*. Now let us candidly examine how it is that the pessary produces its *boasted* relief. Does it not do it by mechanically doing for the uterus, what its ligaments ought to do vitally? Does this not constantly tend to weaken those ligaments, by doing away the necessity for their own action, allowing them to become more torpid? for it is alleged that their previous debility was the cause of the descent. Most certainly this is the case in one instance as well as in the other. So we see that the stupid objection on physiological grounds, applies as much to the pessary as to the external support. Then, so far as the danger of mechanical support is concerned in the argument, the matter is neutralized; leaving the decision to be made up from facts and other points in the case. Again, it is said that the vagina is the principal support of the uterus, by contracting itself, like an India rubber tube. For argument's sake, we say, let it go at that, and we will pass on to scrutinize a little further. If, when there is prolapsus, there is generally a relaxed and dilated vagina, and this state of that organ will stand as the cause of the descent, what is the natural effect or action of the pessary on these parts? It appears to be this; that it perpetuates and aggravates the cause, i. e., the relaxa-

tion of the vagina, by occupying the utmost diameter of this organ, destroying its elasticity, and adding to its primary relaxation. It also acts as a foreign substance there, irritating the nerves of organic life, and provoking them to an unnatural action; this is followed by fluor albus which in turn, acts as an exciting cause, both of itself and of the relaxation, perpetuating procidentia and general debility. Now we ask, which course looks the most rational? Which course holds out the most natural prospect of relief, and acts the most in accordance with the normal relations of the system? Which course seems best calculated to conciliate the deranged nervous system, and to *beckon back* the powers of life to their wonted relation and action? Or, to say nothing of the amount of *relief effected*, which produces the wonted relief at the least expense, or with the fewest evils? The facts in the case, and reason, instantly reply, that our *rational* view should be preferred, until it is proved to be of no avail.

Again; let us view the *comparative* merits of the two practices, to wit, by external support and exercise, or by constitutional treatment and the introduction of a pessary, in another point of view, and see if in this view there can be but one voice on the subject, even allowing that one mode of treatment is not paramount to the other in point of efficiency. First, constitutional treatment—what is it? It is but an application to some of the reflected or extended effects of the physical and primary cause. But of the pessary, what is associated with it in all its considerations? The very nature of the subject precludes a full examination of its peculiarities and associations. But who are they who must wear the pessary? The mothers and the daughters, the fair sex, the virtuous, the modest, the diffident; those who hold female peculiarity as a pearl, deposited in the secret archives of the female cabinet. Who are they? They are our mothers, our wives, our sisters, and our daughters. And *again* we ask, who are they? Ask your observation of things and events, and you will see who and what they are; something which, constitutionally, intellectually, morally, and intrinsically, is better conceived of than described. But to make the matter perfectly obvious in its comparative merit, let us slightly contemplate what is *embraced* in the use of the pessary. First, it implies as a general rule, that both mothers, wives, sisters and daughters, on suspicion of existing prolapsus, must submit to an actual inquisition (not exactly ocular, but *next* to that); this itself seems like an unhallowed entrance within the veil, i. e., of female sanctity. But by whom is this inquisition instituted? by her, or themselves, who often blush at the contemplation of themselves? No. Is it by a father, or a husband, or a brother? No; but by a stranger; perchance a *devil*, with no sympathy for his pa-

tient, or sense of moral obligation; and what gives edge to the matter is, that it does not take place under imminent danger or racking pain; but in a state of exalted nervous sensibility, and comparative health, at all times and hours of the day. But again; the bitter part is to come; for it is now a fact, that the unmarried, from fifteen years upward, as well as married females, labor under the class of diseases under consideration, and require the same means of cure. Now, to say nothing of the mental torture of the poor and chaste virtuous girl,—are even rough fathers, brothers, and husbands, prepared to like it? No, it is always attended by a sort of submissive, but humbled pride. Again, considering it in its *moral* tendency, it is truly *demoralizing* in its nature. Previous to submission, the poor creatures would give everything if they could avoid it, they feel as though they were about to be ruined; yea, to be offered on the altar of degradation; but once done, the die is cast, the relief obtained or not, the mental anguish is over, and the matter sinks in her imagination; it becomes a necessity, a common occurrence; she now has the outer strong door to the beautiful temple of chastity broken down, or severely tried; I mean the door or bar of female delicacy and suspicion. Her acute feeling is blunted, fine feeling put to sleep; whatever the doctor says, soon becomes a law, and a matter of course; and the sprightly, roguish, and blithe countenance of the young girl, is exchanged for the premature gravity and tameness of the mother, who has been stricken by all the accumulated and incidental exigencies and peculiarities of the connubial state (I only speak of tendencies). But I leave the subject now; it is enough; when the matter is duly considered, there will be but one voice. As this subject has been shown, not only does it appear that we, by the use of external support, avoid these *moral* objections, but we instantly, and more perfectly, obtain the desired object; extending not only to the local affections, but to the reflected and extended associations also.

I now proceed to detail a *few* out of the hundreds of successful cases of the application of the *lace* in the different degrees and varieties of this affliction. The cases are so *numerous*, and all so satisfactory, that I am at a loss how to detail, or what selection to make.

CASE 1. Mrs. C., Pennsylvania, married, had aborted once, and had been for years confined to her bed, and could not be moved but in the horizontal position. She could not sit up without a tendency to faint, and complained of *all* the symptoms peculiar to prolapsus. Everything that talent and ingenuity could suggest, or money procure, had been tried, but nothing seemed to afford more than temporary relief. The *lace* was applied, and in the space of one day, every difficulty was relieved, and in the space of a week, by aid of her hus-

band's arm, she walked to a neighbor's. In a few months she did her own work, and in one year bore a fine boy. She has since been as smart as other people.

CASE 2. Miss J., of Pennsylvania, unmarried, aged 19, was beautiful, had been the devoted child of pleasure, and the object of admiration. By degrees she became pale and weak, bowed forward, dyspeptic, and unable to endure much. Her limbs were extremely weak and tremulous, also bloated at times; her back ached continually, her hips were *very* weak, and subject to cramps on the slightest motion, and the groins and lower abdomen experienced great sense of pressure and weight. The stomach partook largely of the effect of the displacement, and so great was the nervous disturbance, that she could not ride in a chaise, and scarce walk the floor, without fainting. All treatment failed, and she was supposed to be doomed to consumption. The abdomen was *very* flaccid and fallen, as in Fig. 4. The *lace* was applied, and in an instant the pain in the back was relieved, and she was able to walk comfortably. In four days after, I called, and she was about well, so far as ease and ability were concerned. She is now a hearty girl, and restored to society. This case was the astonishment of the neighborhood.

CASE 3. Mrs. B., of Pittsburg, Pennsylvania, married, was a miserable case of prolapsus, and had been so for years. She informed me that she had felt alarmed for the influence of her countenance on her rising family, as it was so despairing and horror-stricken by continual gloom and pain. Her limbs were almost powerless, and she "had not walked to church in the city for four years." Had such a pain in her back, and bearing down upon the lower extremity of the back bone, that she could not sit without raising her feet up on the table, and tilting back the body, thus taking off the weight of the organs from the parts below. The flabbiness of her abdominal walls was very remarkable.

The *lace* was applied, and in the space of an hour, she walked to the market and back, without any fatigue or pain. She has since informed me that one thousand dollars per year would not purchase the privilege of wearing her *lace*.

CASE 4. Mrs. C., of Pittsburg, Pennsylvania, had for years been unable to attend to her domestic concerns, and was under medical treatment almost continually, but to no avail. The stomach was much retracted, the abdomen exceedingly flabby, the bowels lying on the bones below, the weakness, or sense of separation in the hips was great, the *limbs* were almost useless, the whites excessive, the costiveness very great, and the sense of weight and bearing down was insufferable in the sitting or standing attitude.

The *lace* was applied in her case, and I knew no more of her

for about one year, when I called on her, and found her *restored to health*, and attending to, or rather *superintending*, a large public establishment. Her husband informed me, that the price of that *lace* had done more for her than all the hundreds he had ever paid for doctoring before.

CASE 5. Mrs. L., and Miss M., Philadelphia, were two cases exactly alike. So extreme was their general muscular laxity, that they could walk but few steps; and so great was the general displacement, that it appeared that they both must be, or have been laboring under consumption. The heart partook very largely of the effects, and the stomach also. All the symptoms and effects of prolapsus were extreme. In these cases the lace was applied, and in two weeks they were nearly restored. Their lips had become red, their countenances flushed, their forms erect, their respiration full and easy, the heart quiet, and the strength and locomotive powers were much improved.

CASE 6. Mrs. C., Connecticut, had been confined to the bed or house for two years, had spent a large amount of money, employing the best and most reputed of the faculty of the country, and had rather grown worse. Her doctors told her that she must leave the sea air, which she was preparing to do. At this time she *could* walk across the room with great effort, but serious inconvenience was always the consequence. She had also worn some of the most popular supporters, and was *then* wearing one. I applied the *lace*, after finding that the feel and form of the body seemed to exactly call for it.

She arose at once and walked across the room, and around it several times with such ease, that she exclaimed, "Are you a witch?" and the little daughter followed behind with clasped hands, and a countenance full of joy, saying that "She would send her pink dress to the doctor's little girl, because he had cured mother." In the space of two or three days she was cheerfully visiting in the village.

CASE 7. Mrs. K., Pennsylvania, had for years been confined to her house, and for six months had not been able to stand. She, of all cases, was most perfect in laxity and its consequent deformity. I applied the lace, and she immediately rose, and walked with but little help. I have since received a letter from her husband, declaring his high estimation of the *lace*, and acknowledging the great benefit it has been to his wife.

CASE 8. Mrs. B., Ct., had for many years been the subject of perpetual treatment; sometimes for liver complaint, sometimes for consumption, at other times for dyspepsy, dropsy, spinal disease, etc., etc. Her abdomen was nothing but perfect laxity, and to use the language of one of her friends, "felt like a bag of apple sauce." She had told her doctors that she was not sick, but that if they would let her see them

dissect a human subject, she could tell them where and what was the difficulty. Says she, "it is a *hanging* or *pulling* feeling which seems to draw everything down."

The *lace* was applied to her, and she rose and stood upon her feet, to her own perfect astonishment. Soon she walked, and became a comfort to herself and others.

CASE 9. Mrs. B., Vt., had for fourteen years been confined to her bed; she could not sit, or bear the jolting produced by walking across the floor. Her mind was terribly depressed, almost to mania. Her muscles were nothing but a mass of *tissue*, almost without any animate action. The hand could grasp up any quantity of them. The sensation on attempting to sit was that of inexpressible horror, dragging, and all the other symptoms heretofore delineated. She had been untiring in her applications to the best of the medical faculty, and to no good purpose, until her confidence and hope were exhausted, and her comforts all fled. To aggravate her misery, her friends and gossiping sisters whispered that "she might do better if she pleased." Her repugnance to seeing any doctor was great, and her unbelief very obstinate, so that it was only in compliance to the wishes of her kind husband that she consented to have the *lace* applied. It, however, was applied, and she rose to a chair immediately, and exclaimed, "Now, for the first time, I sit without feeling such a death-like sickness or *goneness* at my stomach!" In the space of one week she walked the room and dressed herself, a thing which she had not done for many years. Her spirits were improved, her courage increased, and her hopes were reanimated. In about six weeks she was able to walk the house, and in two months commenced attention to her domestic affairs, as I am informed.

This case made much excitement, and was the topic of much gossip, and the cause of the returning hopes and health of many desponding people in a like condition.

But why prolong the detail, since the cases are endless, and the salutary issue so uniform.

In all cases of this nature, and, indeed, in all cases requiring the use of the *lace*, though benefit will be received from the same, yet with a view to entire recovery, and to the laying aside the *lace*, patients should be vigilant in the practice of those physical exercises (previously described), they being calculated to restore the flagging energies of the organs in fault, and enable them to perform their proper tasks, by and through their own inherent power to do it.

CHAPTER III.

THE PROPER EXERCISES, OR PHYSICAL AND HABITUAL TREATMENT OF THE BODY—THE PERNICIOUS TENDENCY OF MODERN PRACTICES IN MANY ITEMS OF DRESS—MALE DRESS—FEMALE DRESS.

IN closing this interesting subject, i. e. muscular relaxation, what shall I say? I see that millions in our world are laboring under some degree or variety of this malady, producing almost everything else, for which the patient takes any amount of constitutional remedies for affections *supposed* to exist, but which do not, lingering out a cheerless, useless life, which might be rendered useful and happy by a simple mechanical support. I am depressed in spirits and sick at heart. I behold many such medicated to death, while, at the same time, the *cause* and *perpetuity* of their affliction is not under the cognizance or within the orbit of internal remedies, or *any* thing that operates through the living susceptibility only.

But this world is, and ever *has* been, bent on seeking far from home for knowledge, practically acting out the conduct of *Naaman*, the Syrian, who was angry with the holy prophet because he prescribed so simple a cure, so easy of acquisition, so cheap and unassuming. Or, in another view, they carry out the old adage, that whatever is far-fetched and dear-bought is the best. Let us, then, cease wrangling and speculating about the vital principle and other points about which we know *nothing*, and employ and ply our *gross* senses on things and topics that are tangible to them, and upon which we can bring some action to bear, after having arrived at some correct principles to act upon.

Let us not be too high-minded, but let us be busy in picking up the *little* things which make up the elements and aggregate of the great. Let observation of facts and coincidents be the great study; then let us lay these along-side of reason and hypothesis, and if they will agree, then so be it; but if they do not, then let the facts and coincidents *stand*; yea, I say—*STAND*. Or, in other words, let us not “despise the day of *small* things;” and let us “take the foxes, the *little* foxes, that spoil the vines, for our vines have tender grapes.” Let us learn that the secret of health is to *preserve* it, and *that* by an active, prudent and virtuous life, directed by the laws of nature and of our chemical, mechanical and vital economy. Let us learn also that life and health is a beautiful chain, made up of ten thousand links and natural dependencies, and that one of them being broken modifies and disturbs the functions and beauty of the whole.

Let us not forget that when disease has come, it has generally been the result of a violation of the above material considerations, and of course is the rather to be remedied by those means that are naturally calculated to soften the effects, and restore the primitive, tangible relations. Or, in other words, let us *practically* bear in mind that in all cases there should be some analogy between both the cause, operation, and cure of a disease.

The pernicious tendency of modern practices in many items of Dress.—On this subject books might be written, but I shall here only *glance* at some of the mistakes in modern fashion: nor do I now have any reference to the practice of lacing, but desire to show the *natural* tendency of the fashionable cut of many garments which are commonly worn in society. And before particularizing, I will briefly present to the reader the general intentions of nature with reference to the reciprocal bearings of *all* the truncal organs.

We have seen, in the prosecution of our subject, that nature has ordained that there should be a physical *levity* as well as a moral one. Or, in other words, that both our souls and bodies should war against gravity. We also see that such is our physical arrangement, that all of our organs are crowded together, and *that* from below upwards, through the elevating agency of the elastic abdominal muscles. By this arrangement we see that in proportion as the abdominal muscles are active, they must compress the abdominal organs, and of course lift them up, correspondingly diminishing the size of the abdomen; or, in other words, diminishing it at its lower region, and enlarging it at the waist or its upper region, thus producing an inverse action on the chest or *upper* trunk, by supporting the *heart* and *lungs*, pressing apart the opposite ribs. We of course see that all our actions, habits and dress, should tend to imitate and sustain this proportion, as to size and state, or at *least* we see that these should not exert the least reverse tendency.

I will now make a few general remarks on the striking contrast between the cut and operation of the different garments of this and the former century. I have reference to their necessary tendency on the mechanical physiology.

Male Dress—The Pantaloons.—We find that they, in former generations, were made with flowing fullness, admitting of free and perfect motion in the knee. We next find that they seldom wore suspenders, but had the body part of the pants cut short, so as only to cover the hips. Again, we find that they buttoned snugly around the *lower* trunk, below the bilge of the abdomen, acting thereby as a support to the whole mass, and also the inguinal openings, where ruptures (or hernias) protrude, and it is a curious fact, that, in by-gone generations, there were but few instances of hernia, dyspepsy, or hypo-

chondria ; but now, they are the order of the day. Let us compare this garment, cut and worn as it is in the present day, with the former fashion and effects. We now see the legs cut small, prescribing the motions of the limbs. We see them strapped down, producing too much perpetual pressure on the surfaces of the knee joint. We next see a *long* body part, rising and buttoning *above* the bilge of the abdomen, around the short ribs, and held up by suspenders, thus tending to approximate the head to the feet. We see again how different is the effect on the form of the trunk and the primitive relations of the truncal organs ; for if they touch the trunk at all, they press downwards, putting the abdominal muscles upon the continual tax to resist the downward pressure ; yet, nevertheless, this pressure will succeed in overcoming the efficiency of the muscles, and urge gently, yet surely, the organs downwards, producing all the specific effects of such an action. We also find that it is assisted in this work of derangement by the straps, which most effectually keep the belly pressed in. Again : it is not difficult to see what must be the slow, but sure tendency on the organs of the chest. First, it tends to draw down the shoulders and compress the chest, confining it in a depressed condition, thereby compressing the lungs, preventing their free expansion through the use of the intercostal muscles. Just observe, then, how the whole order of mechanical physiology is perseveringly undermined, and not a single comfort gained in return.

The Vest.—In old times this garment was cut loose and long, more like a wrapper, adapted in its length to the cut of the pants. But now it comes only down to a point just above the proper place of the abdominal bilge, and is worn at *least* so tight that it tends to crawl upwards, and look very undignified, aiding in the unfortunate action of the pants, to restrict the development of the size and functions of the chest, and to depress the abdomen. Or, in other words, producing a partial separation between the pectoral and abdominal organs—a very *unnatural* dissolution, by the bye.

The Coat.—This garment in olden time partook of the convenience, utility and dignity of the rest of the apparel. It was large, loose and flowing, not pinching or compressing anywhere, giving the middle-aged and venerable men a patriarchal look and mien, that commands reverential respect to this day. But how is it now-a-days ? Why, it must be what is called a *close fit*, a perfect frame, compressing the chest, acting like an outer band to strengthen the two inner ones, thereby the more effectually inverting every physiological arrangement of a tangible character.

Female Dress.—On this subject I am not so competent to specify, as I have never acquainted myself with the peculiarities

of oriental female dress, neither have I the privilege of knowing *all* about the articles of female attire, at *this* day; but one thing I *do* know, that once female health was something real, but that now we can scarce find enough of it to serve as a sample of what it might or should be. I, however, happen to know enough to awaken both my regret and disgust.

The Quilt or Skirt.—This garment is generally quite weighty, and, commonly, two or three are worn at a time. Now-a-days they are not suspended by either the *hips* or shoulders; not by the shoulders, because then there could not be enough of the beautiful neck exposed, without exhibiting the uncouth shoulder strap; but they are bound around the waist (above the bilge of the abdomen), so tight that the form of the body prevents their falling or drooping. This, we must see, is continually warring against nature, and perpetually antagonizing the force of the abdominal muscles, in their attempts to preserve a small abdomen, and large waist and chest. We know that by degrees this will increase, and make an abdomen like Fig. 4. It also tends both to compress and depress the chest, especially at its largest and most flexible part.

In this way there is a gradual separation between the organs of the chest and abdomen brought about, giving rise to an inversion of the diaphragm, and consequently to all those feelings and effects heretofore delineated.

The Jacket.—Of these, I believe, there are several kinds, but there is one general tendency in the whole of them, viz., to compress the chest, and push down the abdominal organs, more especially those which are made long, so as to make a *long waist*, and large appearing hip.

These, because the natural shape of the body makes them slip up, are armed with whale bones, so as to keep them down. Their lower ends press into the sides and abdomen, coinciding with the other things just mentioned. Thus the to be dreaded effects of gravitation in the organs are gradually brought on. The forms of nearly all females now demonstrate the fact. Besides, all the unfortunate effects of compression on the lungs are being cultivated and brought to maturity, and the poor deluded creature is more than fortunate, if the fruits of the culture do not ripen in her bosom.

The Board.—Next comes the *harmless* board, passing down the centre of the chest, and reaching about below the bilge of the abdomen. How does it operate, or do the desired good? Why, let us see. If at all, it must be by supporting the abdomen, and preventing its drooping. This it does in the following manner; viz., the inferior extremity of it resting on the most compressible part of the abdomen, is to act as a lever, to enable the other extremity of the board to allow the chest to lean upon it. This pressure, it will be seen, plies on the very

place that wants support from below. Nor is the comfortable feeling, at first, or absence of pain, a proof that the bitter harvest of these tendencies will not come, more especially in the form of those bearing down symptoms, spoken of in prolapsus uteri. Believe me, deluded girl! the full fruition of causes and effects, in their natural order, *must* be realized in time, sooner or later, and though it tarry, yet it *will* come like a whirlwind.

Use your reason, not your feelings, as the guide in these matters. Look at natural *tendencies*, under the influence of *common sense*, and behold in the vista the sure result of mad and thoughtless fashion.

The Dress Waist.—In the present day (if I mistake not), a great reform has been effected in the cut of the dress waist, that is, it is not *bon ton* to wear them very closely round the waist. But the panic to have a slim and long waist is such, that the aid of the splints in the jacket and bodies of the dress, all gently acting on the compressible part, is called into requisition, of the downward tendency of which we have all along treated. Meantime the poor female, because she can pass the hand between the dress and her body, is deceiving herself; and sure that no injury can result from such a course, for *she does not lace tight*.

The truth is, my dear friends, that lacing does not consist in any given amount of girding or pinching, but anything is lacing that in the *least* infringes on the expansion of the lower chest and its free motion, or which presses on the upper abdomen, disuniting the abdominal and pectoral organs, and crowding the former into the pelvic or female organs, effecting any amount of terrible trouble.

You, by this time, are prepared and compelled to see, that there is but one species of lacing for the human trunk that will do at all, viz., to lace *upwards*, as nature indicates, and not *downwards*. I, therefore, in view of all I have said, would again say,—let us take the *foxes*, the *little foxes*, which spoil the vines; for *our* vines have tender grapes.

I have to regret that the subject of physical education has again been crowded out of this edition: it was unavoidable. In my opinion, let that be properly attended to in infancy, childhood, and adult age, and there would be little room or reason for books, or anything else, with reference to bodily health.

Should time and health permit, perhaps a more perfect work may be brought before the public, being more particularly full on this point

EXPLANATION OF THE PLATES.

THESE plates are not meant to represent anatomical correctness in all things, but to show some general points, combinations and bearings, and to illustrate some principles. Hence several anatomical errors of the artist have not been corrected, as they do not interfere with the points of demonstration.

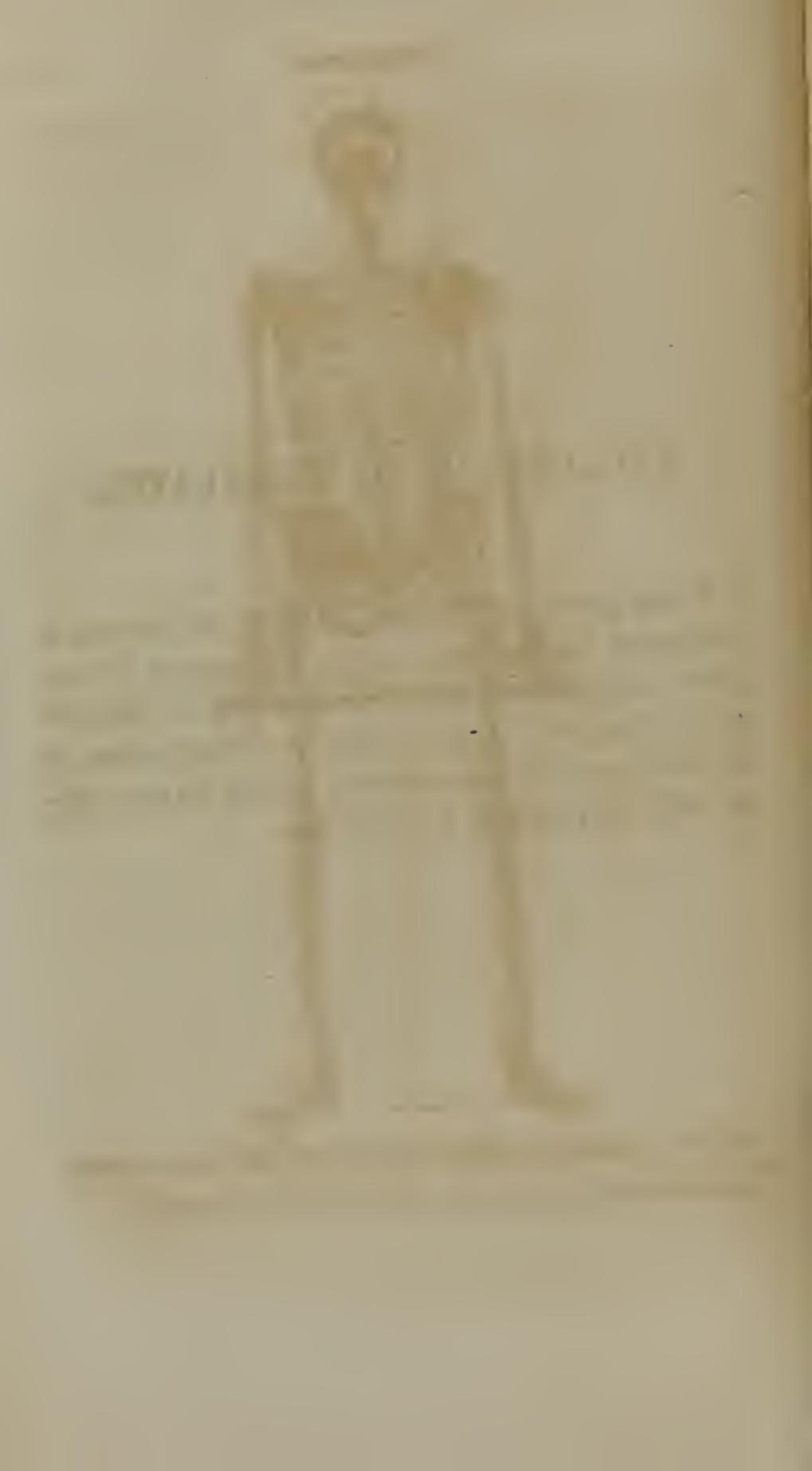


FIGURE L

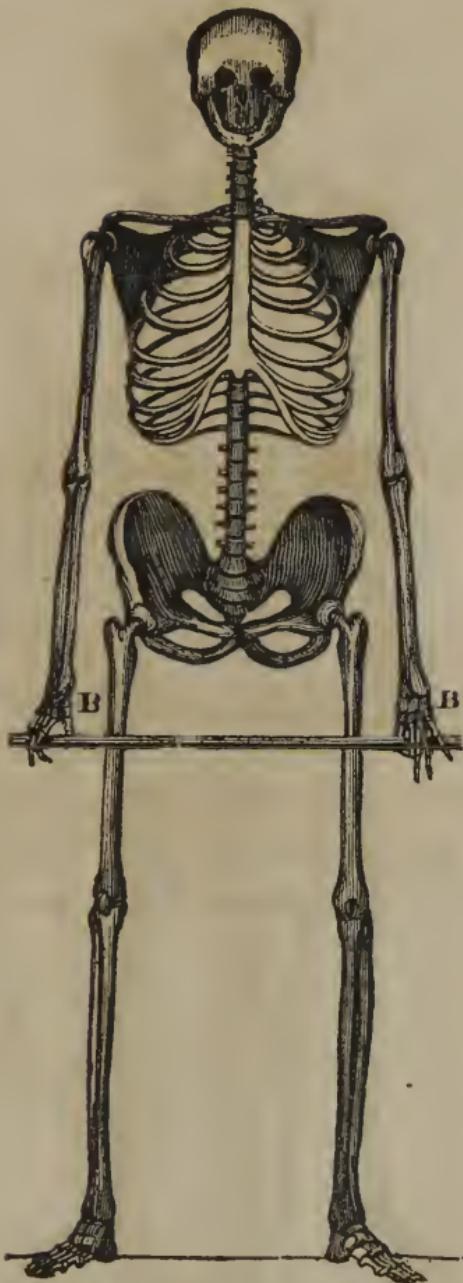


Figure 1 represents a straight, square figure, with high shoulders, and broad chest.

B B The hands hanging by the side, and not in front of the body.

FIGURE II.

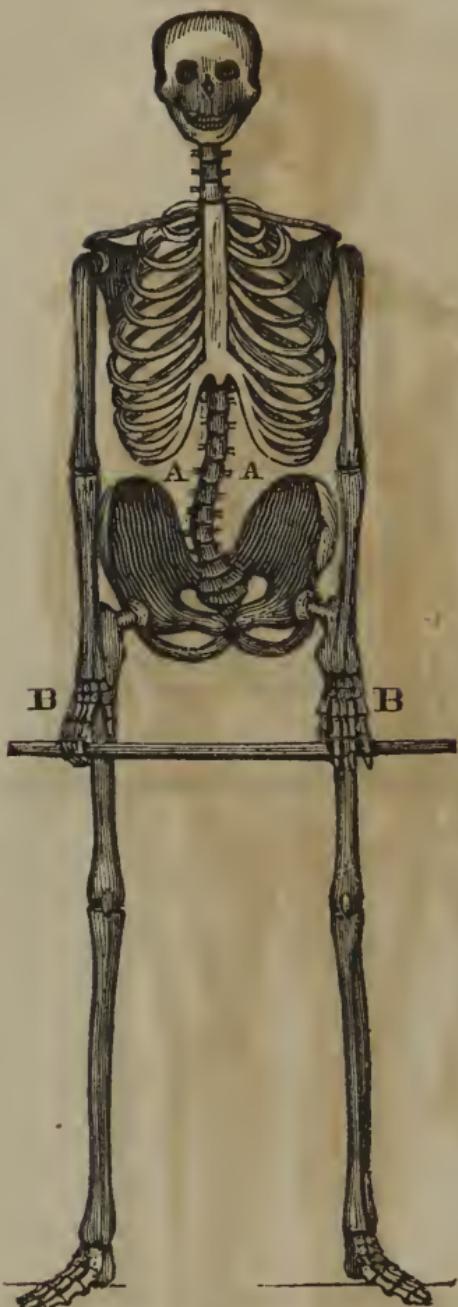


Figure 2 represents exactly the reverse of Figure 1, having low shoulders, narrow chest, and general contraction of form.

A A Curved spine, from the curved posture.

B B The hands hanging in *front* of the body, and not at the sides; see Figure 1.

FIGURE III



Figure III. represents the human figure, giving a perfect specimen of a perfect form.

A A. High head and shoulders.

C. Full, plump stomach.

D. Hands hanging at the sides of the body

FIGURE IV



Figure IV. presents a perfect specimen of an *imperfect form*.

- A. A. Low shoulders, and flat, narrow chest.
- B. Sunken, flat stomach.
- C. Pendant, sunken abdomen.
- D. Hand *dangling in front of the body*.

FIGURE V.

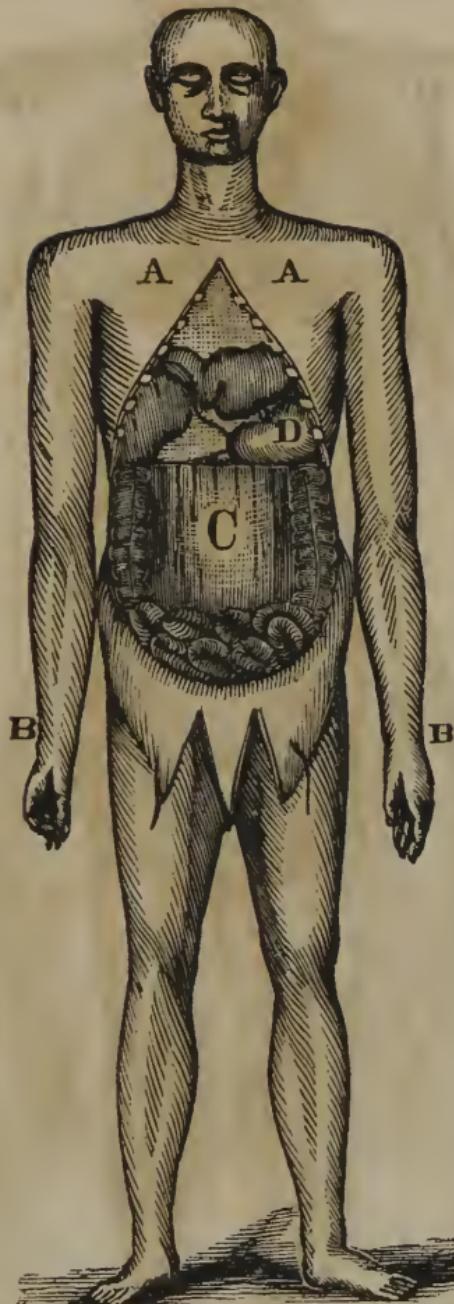


Figure 5 represents an internal view of Figure 3, showing the relative and comparative view of the organs in the healthy subject.

A A High, broad shoulders.

B B Arms hanging by the side.

C Full rotund state of the stomach.

Here the action and bearing is upward, preserving the form of Fig. 3.

FIGURE VI.



Figure 6 gives an internal view of the organs in Figure 4, or the reverse of Figures 3 and 5; that is, the general downward pressure.

B B Low, narrow shoulders.

A Enlarged abdomen at its base, as in Figure 4.

G Descended stomach, spleen and liver, and retracted form at the pit of the stomach.

FIGURE VII.



Figure VII. represents an internal view of Figure III.

- A. Perpendicular line touching the breast, but not the abdomen, which is drawn back by the erect posture and the active state of the abdominal muscles.
- B. Form of the Spine of an *erect* person.
- C. Elevated Diaphragm, supporting the lungs and heart.
- D. Hollow back of the erect and well-formed man.
- G. Urinary bladder at liberty, and uncompressed by the abdominal organs.
- H. Uterus or *womb* uncompressed.
- L. Rectum or *lower bowel* uncompressed by the superior organs.



Figure 8 is the reverse of Figures 3, 5 and 9, and the counterpart of Figures 4, 6 and 8.

- A Depressed Diaphragm.
- B Sunken stomach.
- C Straight back.
- D Pendent belly.
- E Depressed urinary bladder, from the falling of the abdominal organs.
- F Uterus depressed from the same cause.
- G Compressed rectum, or lower bowel.

FIGURE IX.

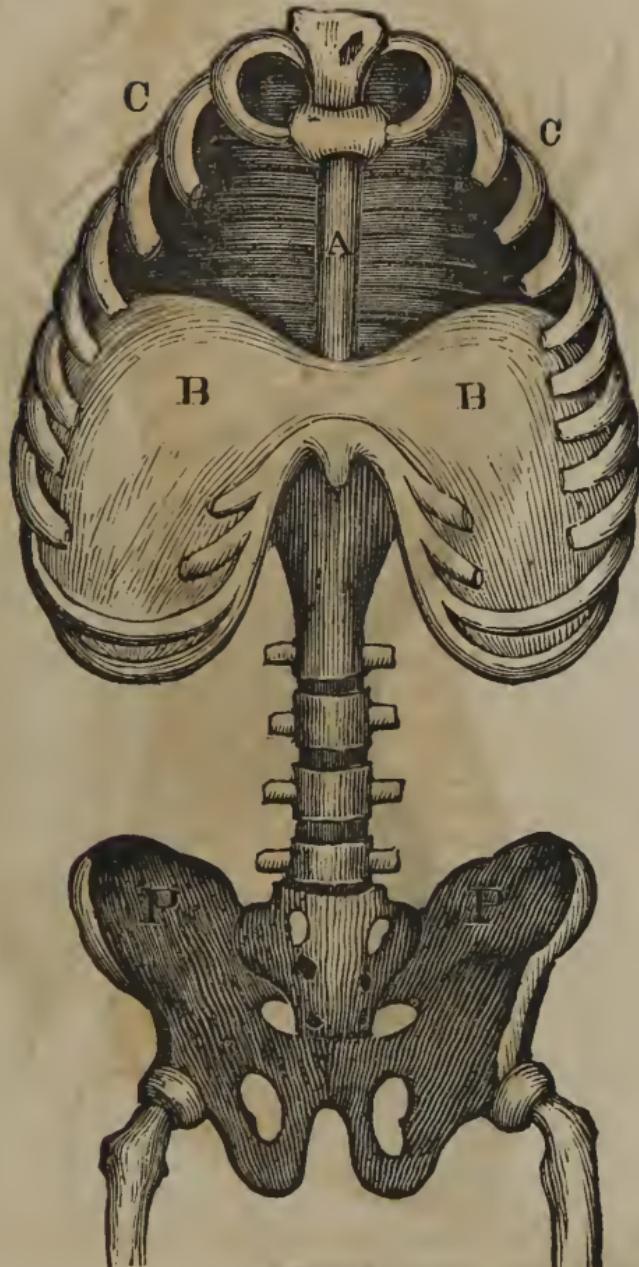


Figure 9 represents the *natural form* of the chest, and position of the diaphragm.

C C Shows how much smaller the upper part of the chest *proper* is.
B B The diaphragm very convex above, and concave below.

FIGURE X.

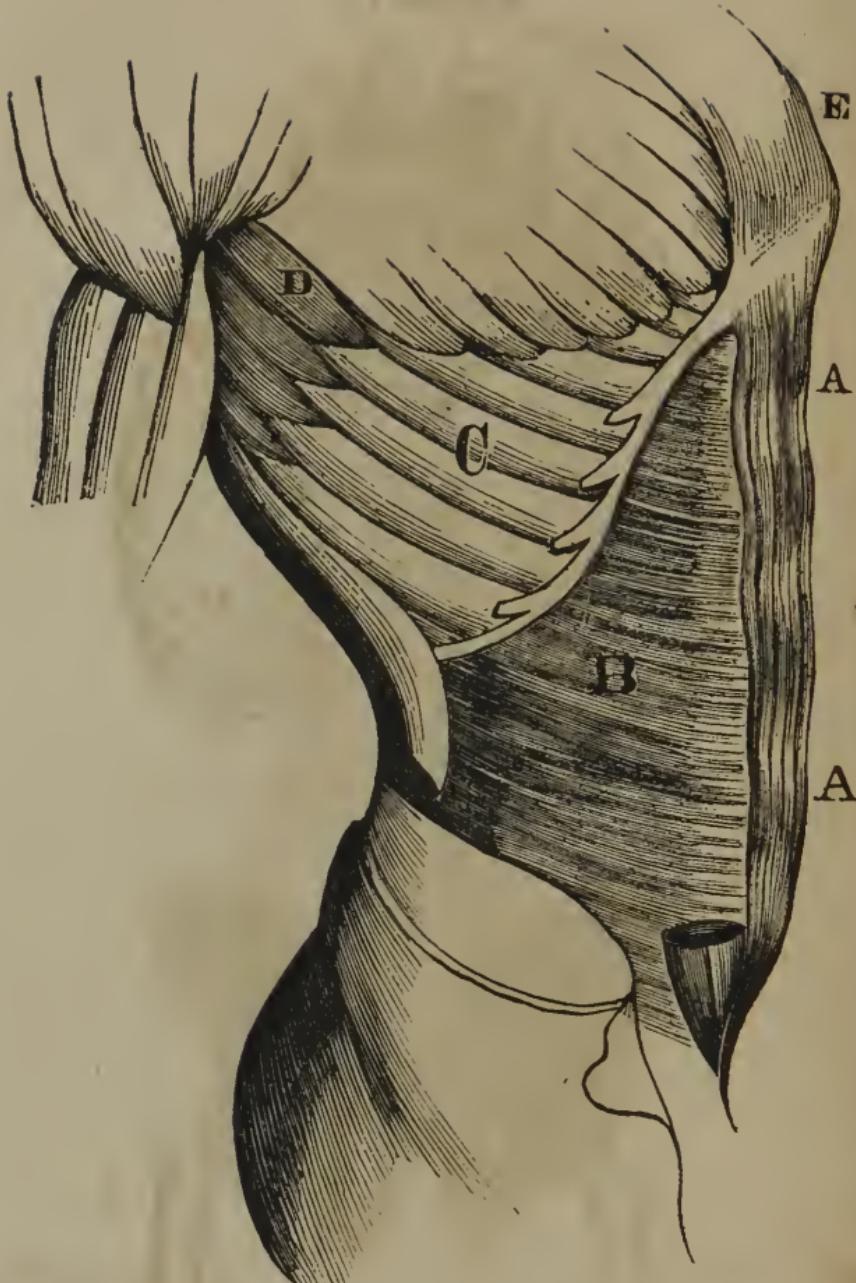


Figure 10 is a side view of Figure 3.

A A Straight abdomen, and the rectus muscle.

B Transversalis muscle.

C Natural position of the ribs.

D Shows how prominent the shoulders should be behind the small or hollow of the back.

E Full or prominent breast bone.

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1846.

FIGURE I.—THE LACE.



Explanation of Figure I.—A A Main spring, passing round the body—B. Bow, passing about the waist, on the hip—C C Front pad, at the lower abdomen, looking backward and upward, if it is not pressed to the body.—D E Elliptic spring, which gives flexibility to the pressure and an upward action—F. Perpendicular curved spring, that gives the upward action to the pad F F Pads for bearing the weak hips on limb springs G G Pass supports, which obviate the kidneys and can be moved forward or backward, or moved to right or left, to accommodate different figures.—Tether are suitable to fit in all the parts.

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